

UNCLASSIFIED

AD NUMBER	
AD313953	
CLASSIFICATION CHANGES	
TO:	UNCLASSIFIED
FROM:	CONFIDENTIAL
LIMITATION CHANGES	
TO: Approved for public release; distribution is unlimited.	
FROM: Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; NOV 1959. Other requests shall be referred to Department of the Army, Aberdeen Proving Ground, MD.	
AUTHORITY	
ARRADCOM ltr 26 Dec 1979 ; ARRADCOM ltr 26 Dec 1979	

THIS PAGE IS UNCLASSIFIED

THIS REPORT HAS BEEN DELIMITED
AND CLEARED FOR PUBLIC RELEASE
UNDER DOD DIRECTIVE 5200.20 AND
NO RESTRICTIONS ARE IMPOSED UPON
ITS USE AND DISCLOSURE.

DISTRIBUTION STATEMENT A

APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED.

UNCLASSIFIED

AD 313 953

CLASSIFICATION CHANGED
TO: UNCLASSIFIED
FROM CONFIDENTIAL
AUTHORITY:

ARRA DCDM 1+C
26 DEC 79



UNCLASSIFIED



AD

313953

FOR
MICRO-CARD
CONTROL ONLY

1

OF

2

Reproduced by

Armed Services Technical Information Agency

ARLINGTON HALL STATION; ARLINGTON 12 VIRGINIA



**Best
Available
Copy**

10 ~~CONFIDENTIAL~~

THIS DOCUMENT CONSISTS OF 86 PAGES.
COPY 32 OF 49 COPIES.

Development and Proof Services

AD NO. 313953

ASTIA FILE COPY

REPORT NO. DPS/TB5-1401/533
TS4-4018/10
TS4-4213/7

ARTILLERY DIVISION

REPORT ON

SUMMER DESERT TEST, 1959, YUMA TEST STATION,
YUMA, ARIZONA, OF RIFLE, 90-MM, M.A.W., T219E4
(M67) WEAPON SYSTEM (U)

533rd Report on Ordnance Project No. TB5-1401
Tenth Report on Ordnance Project No. TS4-4018
Seventh Report on Ordnance Project No. TS4-4218

FC

- (D. A. Project No. 598-09-004)
- (D. A. Project No. 502-01-001)
- (D. A. Project No. 504-03-057)

G. T. WATSON

NOVEMBER 1959

ASTIA
RECEIVED
DEC 17 1959
RESOLVED
TIPDR A

Return to
ASTIA
ARLINGTON HALL STATION
ARLINGTON 12, VIRGINIA
ATTN: TISS



"This document contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, United States Code, Sections 793 and 794. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law."

Aberdeen Proving Ground
Maryland

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

DEVELOPMENT AND PROOF SERVICES
ABERDEEN PROVING GROUND
MARYLAND

AUTHORITY: Ltr ORDTB dated 4 March 1959
ltr ORDBG-DP-DF dated 25
February 1959

GTWatson/ma

SUMMER DESERT TEST, 1959, YUMA TEST STATION, YUMA,
ARIZONA, OF RIFLE, 90-MM, M.A.W., T219E4 (M67) WEAPON SYSTEM (U)

533rd Report on Ordnance Project No. TB5-1401

Tenth Report on Ordnance Project No. TS4-4018

Seventh Report on Ordnance Project No. TS4-4218

Dates of Test: 30 July to 9 September 1959

ABSTRACT (C)

↓ Firings were conducted to determine the general functioning characteristics, mechanical reliability, the accuracy of the weapon system, and the penetration and graze sensitivity of the 90-mm, T249E6 (M371), HEAT cartridge under summer desert conditions. The firing of 99 rounds resulted in no major deficiencies with either the weapon or ammunition. However, previous tests resulted in recommendations to initiate extensive propellant-ignition studies and to redesign the breech mechanism. Improvements in the above areas are considered necessary prior to production release of this weapon system. ↗

~~CONFIDENTIAL~~

CONTENTS (U)

	<u>PAGE</u>
INTRODUCTION	3
DESCRIPTION OF MATERIEL	3
DETAILS OF TEST	5
Procedure and Results	5
Observations	14
CONCLUSIONS	14
RECOMMENDATIONS	14
REFERENCES	18
APPENDIX A: CORRESPONDENCE	A-1
APPENDIX B: FIRING RECORD AND SUMMARY OF RESULTS	B-1
APPENDIX C: YUMA TEST STATION, METEOROLOGICAL OFFICE, DAILY WEATHER OBSERVATIONS.	C-1
APPENDIX D: STAR-GAGING RECORDS	D-1
APPENDIX E: AMMUNITION DATA CARDS	E-1
APPENDIX F: DISTRIBUTION	F-1

1. (U) INTRODUCTION

The tests discussed herein were the first summer desert tests of the 90-mm, T219E4 weapon system. This weapon, except for minor modifications, is the same weapon system that underwent winter environmental tests at Fort Churchill, Canada, earlier in 1959 (Reference 4).

The test results encompass the Yuma firings plus the proof and recoil-balance tests conducted at Aberdeen Proving Ground prior to shipment to Yuma.

2. DESCRIPTION OF MATERIEL

2.1 (U) General Description

The materiel under test consisted of:

- a. Rifle, 90-mm, T219E4 (M67).
- b. Telescope, T181.
- c. Cartridge, HEAT, T249E6 (M371).

Components of the weapon system and the ammunition are not discussed in detail since they are covered in other reports and notes on materiel, (References 2, 3, and 4). Subsequent to the winter test a number of minor modifications were made to the weapon. The following is a summary of the originally proposed modifications and the action taken during the period between the winter and summer test:

Rifle Changes Under
Consideration
(Outlined at meeting
held on 11 March 1959)

Action Required

Action Taken
(Reported by
Watervliet Arsenal)

- | | | |
|--|--|---|
| a. Key monopod | Now - Watervliet Arsenal.. | Monopod was keyed to the front bracket. |
| b. Lengthen trigger grip | Long range - Watervliet Arsenal. | Not accomplished because new triggering setup will be used when spotting pistol is added. |
| c. Relocate radial position of trigger | Now - Frankford Arsenal to give Watervliet new position. | Drawing has been changed to move trigger 10° downward. Present rifle did not incorporate this change because spotting pistol mounting brackets had previously been machined on tube, and brackets would have been out of alignment, had the trigger been moved. |

Rifle Changes Under
Consideration
(Outlined at meeting
held on 11 March 1959)

Action Required

Action Taken
(Reported by
Watervliet Arsenal)

d. Combine jam pin, spring and bushing	Now - Watervliet Arsenal.	The purpose of the bushing was to insure contact of the jam pin with a lug on the hinge block during cocking. By making the jam pin longer and hold- ing it in position with the closure plate, the need for the bushing was eliminated.
e. Eliminate jam pin	Long range - Frank- ford Arsenal.	May be accomplished by redesign of breech mechanism now in progress.
f. Strengthen face shield	Now - Watervliet Arsenal.	Face shield has been strengthened by adding several horizontal and longitudinal ribs to in- side of shield. Insuf- ficient time to incorpor- ate this on present rifle, as mold had to be modified.
g. Coating for face shield	Long range - Frank- ford Arsenal.	Being investigated at Water- vliet Arsenal.
h. Combine sear catch and lock	Now - Watervliet Arsenal.	Investigations determined that it was not feasible to combine the sear catch and lock.
i. Combine cocking shaft and handle	Now - Watervliet Arsenal.	Accomplished.
j. Modify handle cam and provide stop for lock ring	Now - Watervliet Arsenal.	Accomplished. New handle was designed which elim- inated cam angle. Lock- ring stop has been provided.
k. Lock hinge block to tube	Now - Watervliet Arsenal.	Accomplished by adding safety wire through locking screws.
l. Strengthen firing pin spring	Now - Frankford Arsenal to inform Watervliet Arsenal.	Accomplished by increasing length of firing pin spring plug. This, in effect, allows more com- pression of the spring than on previous rifles.
m. Add pilot to firing pin slug	Now - Watervliet Arsenal.	Accomplished.
n. Reduce diameter of cocking shaft (Investigate hardness)	Now - Watervliet Arsenal.	Accomplished - Diameter reduced by 0.005 inch. Hardness raised to R _c 40-46.

<u>Rifle Changes Under Consideration</u> (Outlined at meeting held on 11 March 1959)	<u>Action Required</u>	<u>Action Taken</u> (Reported by Watervliet Arsenal)
o. Improve sight	Now - Frankford Arsenal.	Frankford Arsenal informs that this has been done by improved adhesives.
p. Widen hammer slot	Now - Watervliet Arsenal.	Accomplished.
q. Add brush to tool	Now - Watervliet Arsenal.	Not accomplished, but will be on any production models.
r. Attach cover spring	Now - Watervliet Arsenal.	Accomplished - screw added.
s. Strengthen firing pin, harden firing pin guide pin in hammer.	Now - Watervliet Arsenal.	Accomplished. New method of guiding firing pin in hammer is being investigated.
t. Secure closure plate	Long range	Accomplished.
u. Provide expendable breech cover	Long range	Being investigated.
v. Redesign complete breech mechanism	Long range	Contract has been awarded by Frankford Arsenal for breech redesign.

2.2 (U) Propellant-Ignition System

Propellant-ignition studies which were recommended as a result of the winter tests are currently in progress at Aberdeen Proving Ground. Except for the propellant lot, the ammunition system used in the summer tests is the same system used in the 1959 winter tests.

3. DETAILS OF TEST

3.1 Procedure and Results (U)

Prior to proof firing at Aberdeen, the rifle was star-gaged, boroscoped, and magnafluxed. The tube diameters were within drawing tolerances before firing and did not increase more than an allowable 0.002 inch after firing. The boroscope and magnaflux examination revealed no defects in the tube. Star-gaging records are inclosed in Appendix D. Detailed round-by-round data of the proof and recoil-balance tests are contained in Yuma Firing Record No. 2969, Appendix B, test rounds 1 through 11. The following is a summary of the rounds fired for recoil and velocity:

CONFIDENTIAL

<u>Round Number</u>	<u>Average Velocity, fps</u>	<u>Average Recoil, lb-sec</u>
1	719	5.59
2, 3, 4 and 6	705	4.41
10 and 11	698	2.25

Subsequent to the firing of round 1 the venturi was enlarged by hand-grinding. The firing of three additional rounds showed the recoil level to be slightly in excess of the value desired. Additional grinding was performed after the firing of round 9 (rounds 7, 8 and 9 were proof rounds). The nozzle bar in the breech vent was ground as follows:

<u>Round Number</u>	<u>Before Grinding, in.</u>	<u>After Grinding, in.</u>
1	0.829	0.750
9	-----	.734

3.1.2 (U) Yuma Tests. Rifle, 90-mm, T219E4, No. 12 was unpacked from the shipping crate and checked for mechanical functioning at Yuma on 3 September 1959. The weapon system was moved to the firing site and tests were commenced on 4 September 1959.

(C) A total of 40 T249E6 HEAT rounds was fired. Detailed round-by-round data are contained in Yuma Firing Record No. 2969, Appendix B, test rounds 12 through 51. Twelve rounds were fired at 6-inch armor plate set at 64° obliquity from a range of 300 yards. Muzzle velocities were recorded on all 12 rounds. The weapon was fired remotely from the integral ground mount through utilization of an electric solenoid mounted on the rifle. Figure 1 illustrates the impacts on the face of the plate and Figure 2 shows the rear of the plate for the same rounds. Ten complete penetrations were obtained. Rounds 12 and 14 were over the target. Impact coordinates were recorded on the ten rounds that hit the plate.

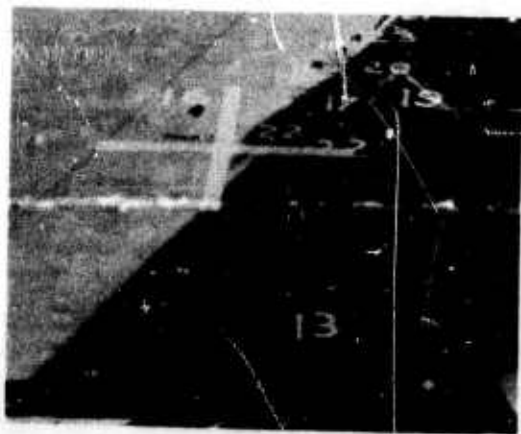


Figure 1 - 59T3536 (C): Impacts on the Face of the Plate 300-Yard Range.

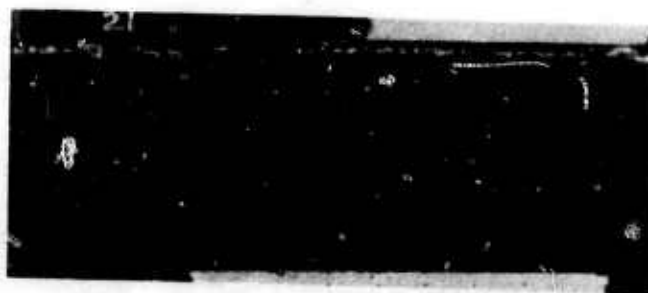


Figure 2 - 59T3537 (C): Exit Holes of Impacts on Rear of Plate at 300-Yard Range.

CONFIDENTIAL

Figure 3 is an impact plot for these firings. A summary of the 300-yard plate phase follows:

Test Round Numbers	Muzzle Velocity, fps	
	Avg	Std Dev
12 to 23	716	7.2

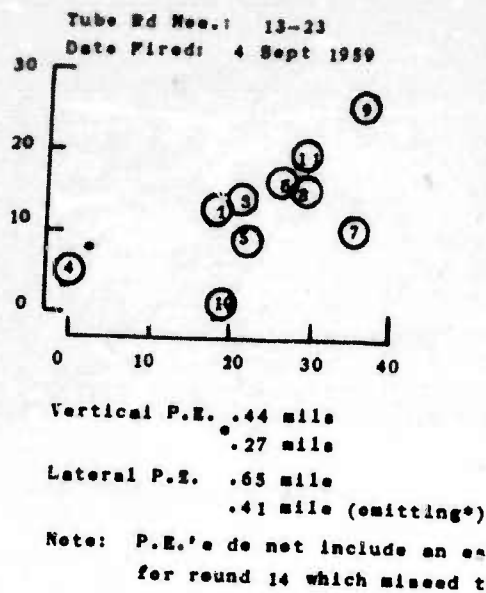


Figure 3: Impact Plot of 300-Yard Target.

(C) Eighteen T249E6, HEAT rounds were fired from a range of 15 yards. Sixteen complete penetrations and two partial penetrations were obtained. The impacts on the face of the plate are shown in Figures 4 and 5.

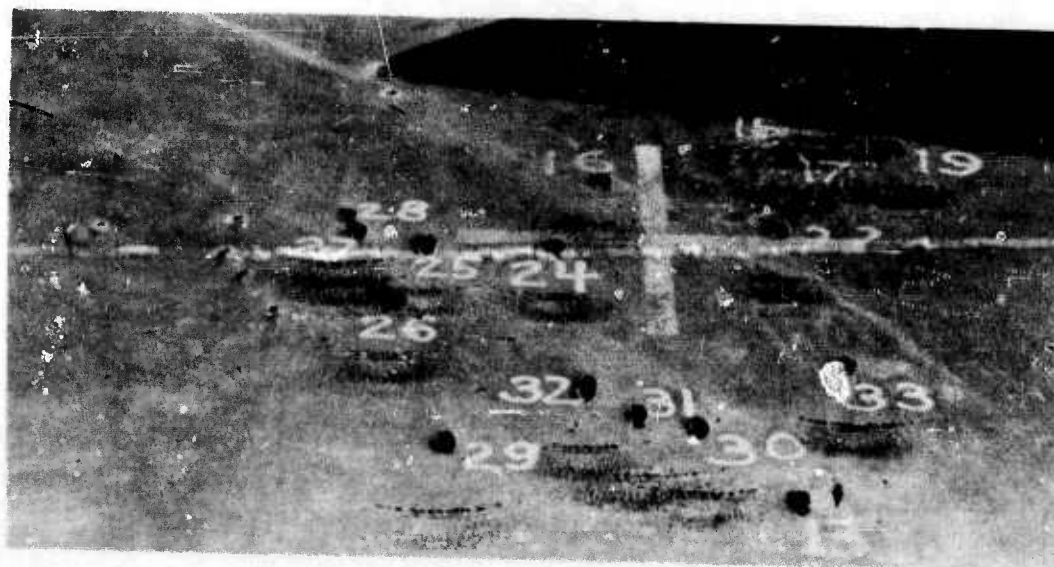


Figure 4 - 59T3535 (C): Rounds 24 through 33. Impacts on Face of Plate at 15-Yard Range.

CONFIDENTIAL

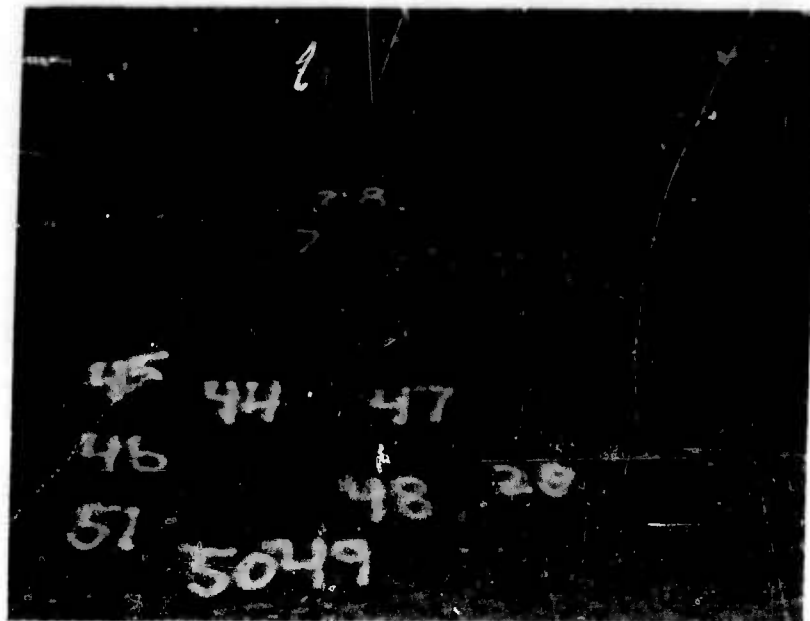


Figure 5 - 59T3533 (C): Rounds 44 through 51. Impacts on Face of Plate at 15-Yard Range.

(C) The partial penetrations were probed and the depth of probe for round 24 was 13 inches and for round 50 was 3-3/4 inches. Observation of the rear of the plate indicated slight bulging on both rounds. Detailed round-by-round data are contained in Yuma Firing Record No. 2969, Appendix B, rounds 24 through 33, and 44 through 51.

(C) Dispersion and time-of-flight firings were conducted at ranges of 300 yards and 500 yards. Inert, T249E6 rounds were used for the accuracy tests. The weapon was fired from the integral ground mount and laid on target through use of the T181 telescope. Figure 6 is a general view of the gunner firing the weapon from the 300-yard firing position.



Figure 6 - 59T3537: General View of Accuracy Firing.

CONFIDENTIAL

CONFIDENTIAL

(U) Time-of-flight measurements were made concurrent with the dispersion tests. Detailed round-by-round data are contained in Yuma Firing Record No. 2969, Appendix B, tests rounds 52 through 70. Figure 7 is an impact plot for the 300-yard firings, and Figure 8 an impact plot for the 500-yard firings. Figure 9 is a view of the target impacts of rounds fired from 300 yards.

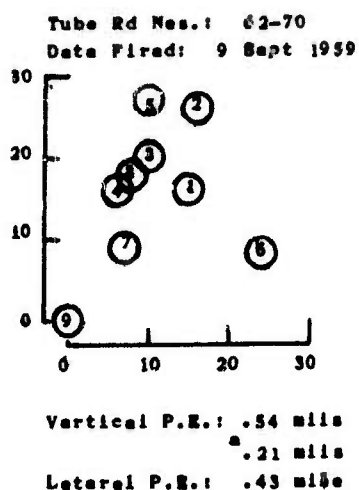
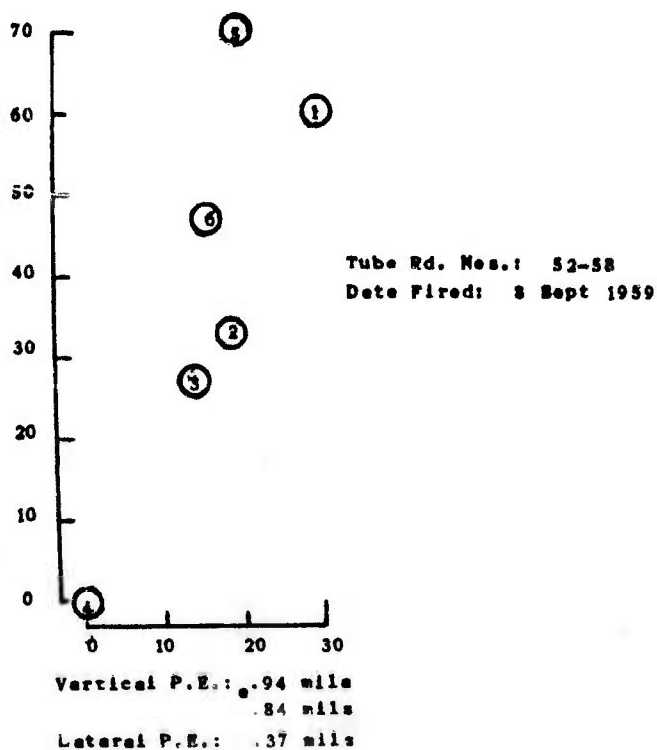


Figure 7: Impact Plot for 300-Yard Range.



Note: P.E.'s do not include an estimate for round 58 which missed target.

Figure 8: Impact Plot for 500-Yard Range.

Table I. (C) Summary of Accuracy and Time of Flight
90-mm Recoilless Rifle

Date Fired	Place	Ammo Temp, °F	Range, yards	No. of Rds	MV, fps		Avg Time of Flight, sec	Time of Flight Dist, ft	Form Factor (T108)	Impact Prob Error, mils				
					Avg	Std Dev				Vertical		Fired	Corr ^b	Lat
										As				
4 Sep 59	Yuma	100	300	10	716	7.2	Not Taken	Not Taken	0.44	0.27	0.65 ^c			
9 Sep 59	Yuma	99	300	9	716	7.6	1.27396	862	2.95	.54	.41			
8 Sep 59	Yuma	108	500	6	739	11.7	2.19908	1460	2.64	.94	.43			
31 Jan 59	Churchill	-12	300	--	---	---	---	---	2.70	---	.37			
2 Feb 59	----	---	---	--	---	---	---	---	---	---	---			
31 Jan 59	Churchill	-12	500	--	---	---	---	---	2.68	---	---			
2 Feb 59	----	---	---	--	---	---	---	---	---	---	---			
19 Aug 58	Aberdeen	70	300	--	---	---	---	---	2.54	---	---			
19 Aug 58	Aberdeen	70	500	--	---	---	---	---	2.36	---	---			

^aCorrected to 7.8 lb projectile weight.

^bCorrected to a constant velocity.

^cCommitting one round.

No relation was found between changes in air temperature during the firing of a group and the velocity or target impact dispersions.

CONFIDENTIAL

CONFIDENTIAL

CONFIDENTIAL

(C) A summary of the results follows:

<u>Test Round Numbers</u>	<u>Range, yards</u>	<u>Velocity, fps</u>	
		<u>Avg</u>	<u>Std Dev</u>
62 to 70	300	716	7.6
52 to 57	500	739	11.7

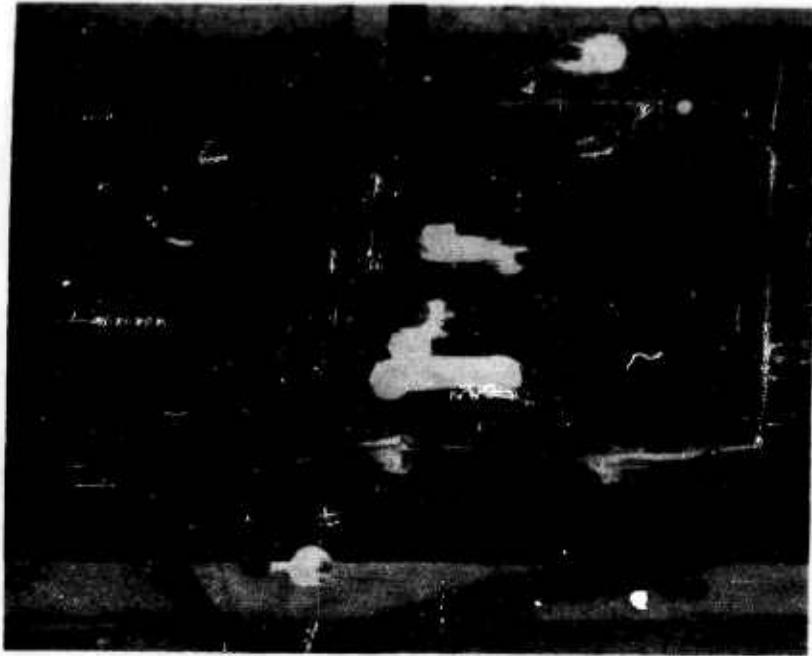


Figure 9 - 59T3534: General View of Target Impacts at 300-Yard Range.

(U) Ten T249E6 rounds were fired for graze functioning at ranges varying from 50 to approximately 300 yards. All rounds functioned on initial impact. The impact area was typical desert terrain.

(U) Temperature-rise and cook-off tests were conducted with temperatures recorded at six positions along the rifle. Temperatures were recorded by thermocouples and associated recording equipment. The propelling charges were loaded to yield rated maximum pressure. During the first phase of the test, the rounds were fired (at as nearly a constant rate as possible) of two rounds per minute for 19 rounds. The twentieth round was inserted in the chamber, the breechblock was closed, and observations were made for cook-off effects. No cook-off was obtained after leaving the round chambered for 30 minutes. Fifteen rounds were fired as fast as possible in the second phase of the cook-off test. The sixteenth round was chambered and observed for cook-off. No cook-off was obtained and the round was fired in the normal manner after being chambered for 30 minutes. Thermocouples were attached to the rifle at the following locations:

<u>Position</u>	<u>Inches from Rear Face of Rifle Tube</u>
1	24.0
2	18.5
3	16.5
4	10.0
5	4.5
6	19.25 (on face shield)

The results of the temperature-rise studies were as follows:

<u>Round No.</u>	<u>Rounds Per Minute</u>	<u>Thermocouple Position</u>	<u>Maximum Rifle Temp, °F</u>
71 to 89	2.0	3 - 4	275 - 274
91 to 105	4.2	3 - 4	285 - 288

Detailed round-by-round data are contained in Yuma Firing Record No. 2969, Appendix B.

3.1.3 (U) General Test Results. The following are general results noted throughout the course of the summer desert test.

The key which keeps the monopod from rotating around the lug on the front ring assembly requires staking so it will not recess into the lug. After the tests were completed, it was noted that the monopod would rotate and that the retaining key (split pin) appeared to be sheared off. Close examination revealed that it had recessed into the lug on the ring assembly.

Disassembly of the rifle breech at the conclusion of the test revealed that the small retracting pin inside the hammer (pin which retracts the striker) was sheared. The jam pin end of the cocking lever was slightly burred and mushroomed. All other components of the breech mechanism appeared satisfactory.

The arsenal-loaded rounds were more difficult to chamber than the APG-loaded rounds. This was due to the crimping technique used to affix the cartridge case to the round; that is, the large diameter of the ball crimp (16, 1/4-inch ball) would "bell-mouth" the cartridge case. No difficulty was experienced in chambering the APG-loaded rounds. It was found that the APG technique of crimping (16, 1/16-inch ball) was inadequate for retaining the round to the case when the rounds were chambered rapidly. The round would move forward from the case an amount sufficient to fracture the blow-out disk, and cause the round to be too far forward for the firing pin to strike the primer.

The firing of several rounds from one gun position on the desert resulted in the rifle settling in the sand to a considerable degree. Once the desert crust was broken deposits of sand and dust were noted in the rifle bore and on the exterior of the breech. After several rounds, the breech became sluggish in opening and closing due to the accumulation of sand and dust. Large deposits in the rifle bore were removed before firing. Figure 10 illustrates

the settling of the rifle and the accumulation of sand and dust in the weapon. Daily maintenance procedures are required when operating under these conditions.

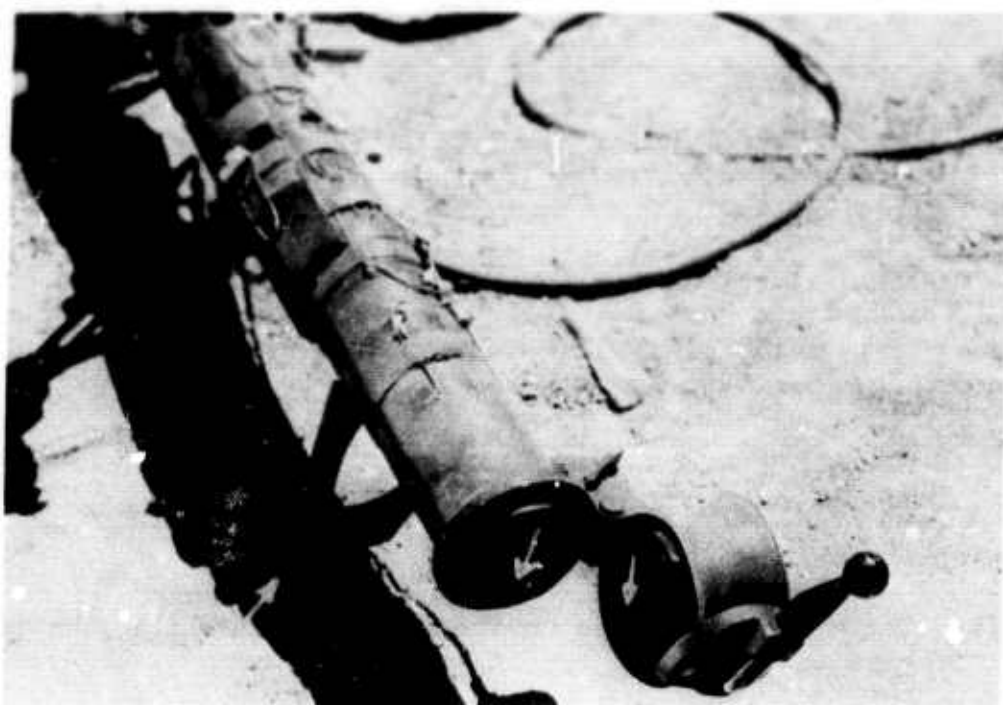


Figure 10 - 59T3541: Sand and Dust Accumulation.

There was no appreciable loss of boresight throughout the firing tests.

Packaging of the round appeared adequate. No difficulty was experienced in removing the rounds from the fiber containers. It was noted that the exterior of the containers became sticky after exposure to the sun. A black substance (believed to be asphaltum) was exuding from the fiber container.

The breech-hinge-retaining screws came loose once during the firing tests. It was determined that the locking wire was improperly installed, allowing the screws to loosen.

While not a specific phase of the test, the skin temperature and propellant temperature of a cartridge exposed to the direct rays of the sun were obtained. Thermocouples were attached to the exterior of the cartridge case and inserted in the propellant. The data accumulated over a period of several days are contained in Appendix C. Cartridge-case skin temperatures ranged from a low of 71°F to a high of 135°F and the propellant

CONFIDENTIAL

temperature ranged from a low of 77° F to a high of 134° F. Figures 11 and 12 are meteorological summaries for August and September 1959. The summaries cover the period of the summer test of the 90-mm rifle.

3.2 (U) Observations

Visual observation of the bore subsequent to firing each round appears to be necessary as a routine procedure. The presence of unconsumed propellant and residue in the bore aggravates chambering difficulty.

Should it be necessary to leave the weapon unloaded and uncovered, accumulation of dust and sand can be kept to a minimum by leaving the breech-block closed. Expendable plastic type breech and muzzle covers would insure protection from blowing sand and dust.

4. CONCLUSIONS

It is concluded that:

- a. (C) The present crimp is unsatisfactory for holding the cartridge case to the round.
- b. (U) The hammer and striker assembly is the critical functioning component of the breech mechanism in its present design as based on previous tests and the tests discussed in this report.
- c. (C) The performance of the HEAT rounds against 6-inch armor plate at 64° obliquity is considered generally satisfactory. However, two failures to completely penetrate when fired from 15 yards indicates that this lot of ammunition is at best borderline in meeting the military characteristics of defeating such a target 90% of the time.

5. RECOMMENDATIONS

It is recommended that:

- a. (C) Studies and tests be initiated to develop a satisfactory crimp for the round.
- b. (U) The R&D model T219E4 weapons manufactured to date be modified to improve the performance and structural integrity of the hammer and striker assembly.

CONFIDENTIAL

YUMA TEST STATION, YUMA, ARIZONA
METEOROLOGICAL SUMMARY FOR AUGUST 1959

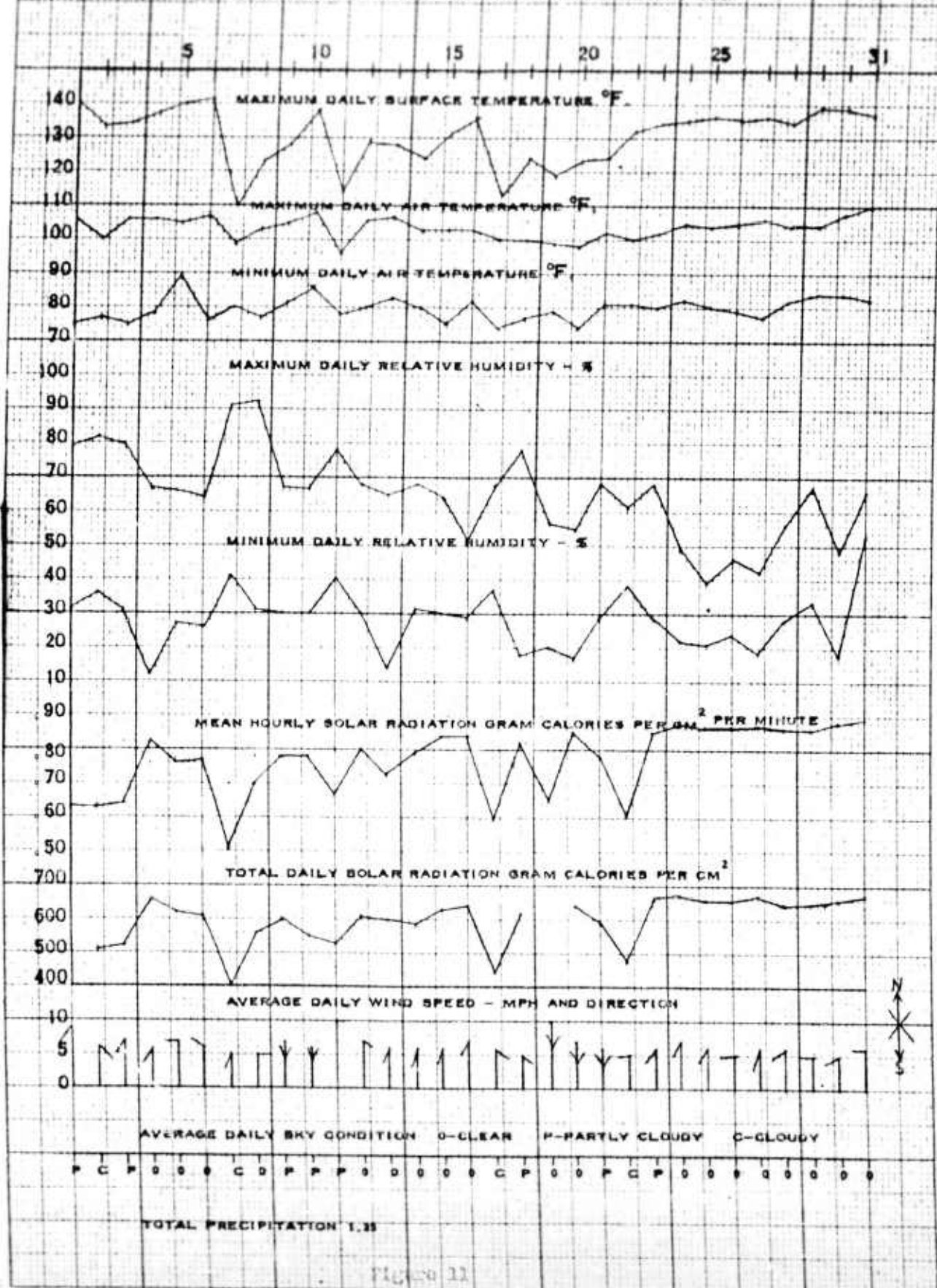


Figure 11

YUMA TEST STATION, YUMA, ARIZONA METEOROLOGICAL SUMMARY FOR SEPTEMBER 1959

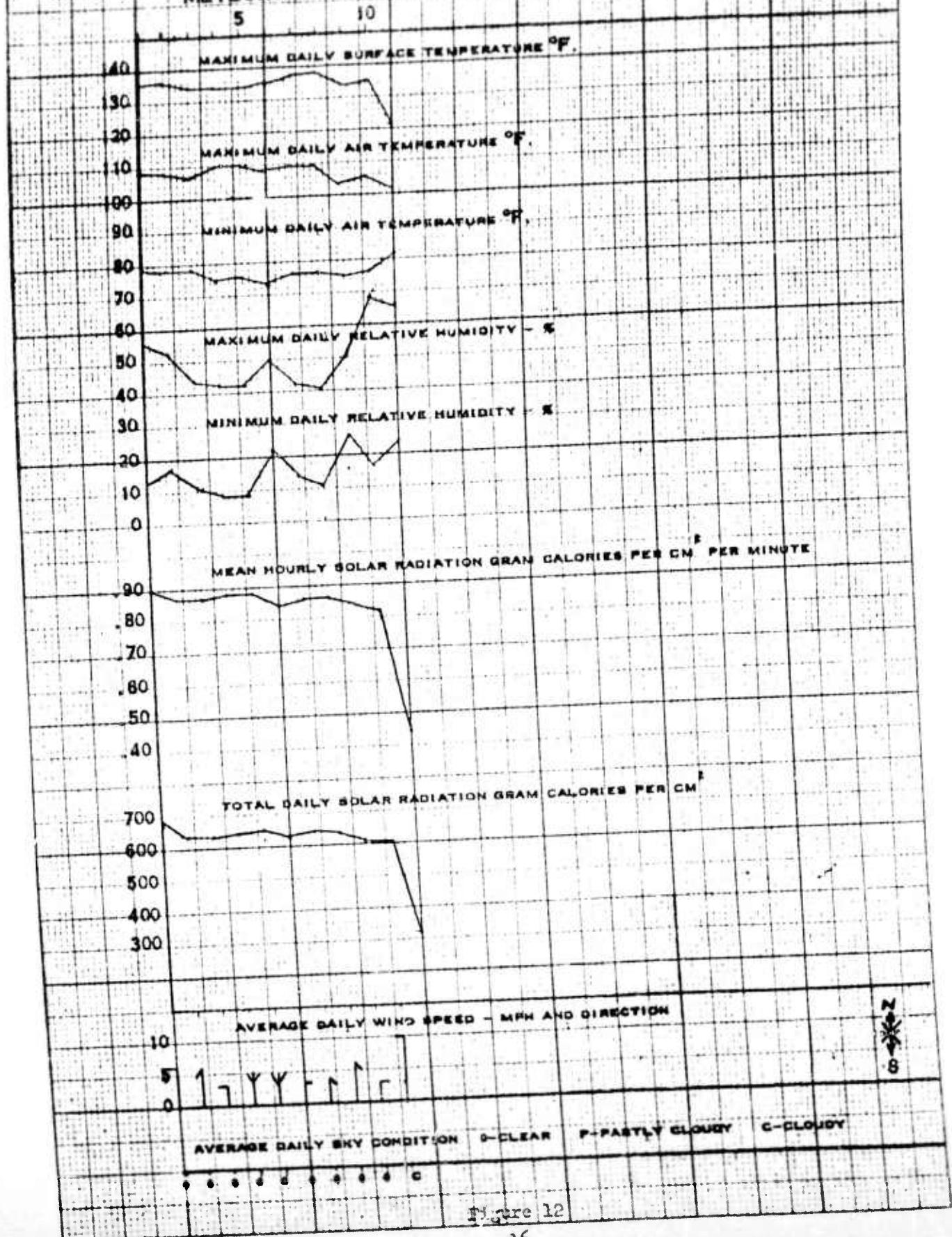


Figure 12
16

SUBMITTED:

G. T. Watson
G. T. WATSON
Project Engineer

H. C. FOERSTNER
Chief, Artillery Ammunition Division
USA Ordnance Test Activity
Yuma, Arizona

REVIEWED:

M. D. Kaplan
for H. A. BECHTOL
Chief, Artillery
Division

F. E. WATTS
Chief, Engineering and Testing
USA Ordnance Test Activity
Yuma, Arizona

G. Morrow
G. MORROW
Chief, Mortar and
Recoilless Rifle Branch

APPROVED:

H. A. Noble
H. A. NOBLE
Assistant Deputy Director
for Engineering and Testing
Development and Proof Services

REFERENCES

1. Letter, File ORDBG-DP-DF, Subject: Summer Environmental Desert Test, 1959, of Rifle, 90-mm, T219E4.
2. First Report and Third Report on Project TS-4218.
3. Eighth Report on Project TS4-4018.
4. 520th Report on Project TB5-1401, 9th Report on Project TS4-4018, 4th Report on TS4-4218.
5. OCM Item 35040 and OCM 37136.

APPENDICES

	<u>PAGE</u>
A, CORRESPONDENCE	A-1
B, FIRING RECORD	B-1
C, YUMA TEST STATION, METEOROLOGICAL OFFICE, DAILY WEATHER OBSERVATIONS	C-1
D, STAR-GAGING RECORDS	D-1
E, DISTRIBUTION	E-1

APPENDIX A

Correspondence

COPY/dwk

ORDBG-DP-DF

MrHolwager/dr/22190
Feb 25 1959

SUBJECT: Summer Environmental Desert Test, 1959, of Rifle, 90mm,
T219E4

THRU: Commanding Officer
Yuma Test Station
Yuma, Arizona

TO: Commanding Officer
USA Ordnance Test Activity
Yuma Test Station
Yuma, Arizona

1. Test of Rifle, 90mm, T219E4 with Cartridge, HEAT, T249E6R7 and Fuze, T278, is assigned to Ordnance Test Activity for accomplishment.

2. The test directive dated 10 March 1958, furnished under date of 4 June 1958 as Incl 1 to letter, subj: Transmittal of Directives for Programmed Summer Environmental Tests(U), is applicable to the 1959 Summer Environmental Test Program.

3. Information on availability of ammunition for this test will be furnished by Frankford Arsenal. Information on availability of the rifle will be furnished by Watervliet Arsenal. An engineer from Aberdeen Proving Ground will be made available for this test, if requested by Ordnance Test Activity.

4. It is requested that this office be furnished two copies of Ordnance Test Activity Test Plan, prior to starting of test phases.

FOR THE DIRECTOR:

BENJAMIN S. GOODWIN
Associate Director

Copies furnished:

OCO (ORDTS)

Watervliet Ars Attn: ORDBF-ZO

Frankford Ars Attn: G. Schechter

PPO, D&PS

Comptroller, APG

CONARC L.O.

M. Resnick, Pic Ars, 20 Feb 59

ORDBG-DP-DF

1st Ind

MrSadlowski/dr/23298

ORDTB

SUBJECT: Ordnance Corps Proposed Environmental Summer (1959) Test Program-
Yuma Test Station, Yuma, Arizona, Mar 11 1959

USA Ord Development & Proof Services, Aberdeen Proving Ground, Md.

THRU: Commanding Officer, Yuma Test Station, Yuma, Arizona

TO: CO, USA Ordnance Test Activity, Yuma Test Station, Yuma, Arizona

1. Forwarded for accomplishment as part of the Ordnance Test Activity basic mission.
2. Information on materiel availability as well as test directives will be dispatched on an individual basis.
3. Ordnance Test Activity is requested to furnish cost estimates, at an early date, in order that consideration may be given to arranging for additional project funds, if required.

FOR THE DIRECTOR:

1 Incl
n/c (w/d 5 cys)

BENJAMIN S. GOODWIN
Associate Director

Copies furnished:

CG, OTAC, Detroit Ars Attn: ORDMC-REO w/l cy Incl
CG, ARGMA Attn: Mr. F. Bunn w/l cy Incl
CO, Rock Island Ars w/l cy Incl
CG, Frankford Ars w/l cy Incl
CO, Picatinny Ars Attn: Mr. M. Resnich w/l cy Incl
PPO, D&PS w/l cy Incl
Comptroller, APG w/o Incl
CSB w/o Incl
Supply Divl, D&PS w/l cy Incl
Engineering Testing, D&PS w/l cy Incl

COPY/dwk

HEADQUARTERS
DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ORDNANCE
WASHINGTON 25, D. C.

Mr. Blakeley/gnv/56211

ORDTB

4 March 1959

SUBJECT: Ordnance Corps Proposed Environmental Summer (1959) Test Program -
Yuma Test Station, Yuma, Arizona

TO: Commanding General
Aberdeen Proving Ground
Maryland
Attention: ORDBG-DP-DF

1. The subject proposed program has been approved by the Office,
Chief of Staff, Research and Development with the provision that Item AA 12-59Y
be corrected to read "carriage" instead of "cartridge".

2. It is requested that your office notify Yuma Test Station, Yuma,
Arizona of this action.

FOR THE CHIEF OF ORDNANCE:

Sincerely yours,

1 Incl
6 Cys of Staff Approval

WERNER HOLTZ
Lt. Col., Ord Corps
Assistant

STP/aw

DISPOSITION FORM

ORDTB

File No. 00/9U0 1372

Subject: Ordnance Corps Proposed Environmental
Summer (1959) Test Program - Yuma Test
Station, Yuma, Arizona

TO C/R&D, DA

FROM CofOrd

DATE 27 Jan 59

COMMENT NO.
1

Mr. Blakeley/gnv/79763

1. In accordance with AR-705-28, copies of the Subject Program are forwarded for review and approval.

2. Copies of this program have been forwarded to other technical services for information and retention.

FOR THE CHIEF OF ORDNANCE:

1 Incl
Ord Summer Prog. (59)
6 Cys.

N. L. KLEIN, Assistant

TO Chief of Ordnance

FROM C/R&D

DATE

COMMENT NR 2

1. The Chief of Research and Development approves the inclosed Summer, 1959, Ordnance Environmental Desert Test Program.

2. Test AA-12-59Y should be corrected to show carriage instead of cartridge.

BY DIRECTION OF THE CHIEF OF RESEARCH AND DEVELOPMENT:

1 Incl
n/c (4 cys w/d)

/S/ - WALTER A. EDENS

Copy/MSW

A-5

CONFIDENTIAL

CONFIDENTIAL

SUBJECT: Summer Environmental Test of Rifle, 90mm, T219E4, PAT (U)
10 March 1958

Integral ground mount by an experienced recoilless rifle gunner. Unless otherwise noted, the weapon will be ground emplaced for all firing tests. Before firing, the weapon system will be boresighted using a reference point on a 500 yard target. The direct fire sight will be adjusted to the same reference point. Retention of boresight alignment will be checked after firing each 10 round sample or more frequently if considered necessary. The vertical and lateral target impact coordinates with respect to the aiming point will be recorded. The direct fire sight reticle range indication used during each phase of the test will also be noted. Meteorological data will be recorded.

b. Temperature Rise and Cook-off Tests

(1) Facilities:

(a) Iron constantan thermocouples installed at 4.5 inches, 10 inches, 16.5 inches, 18.5 inches, 24 inches, and 29.5 inches from rear face of rifle tube. One thermocouple will be installed on the face shield, 19.25 inches from rear face of rifle tube.

(b) Multi-print recorder for recording temperature rise.

(c) Ammunition exposed to a minimum air temperature of 100°F (125°F desired) minimum exposure of 4 hours with full impact of solar radiation.

(d) Bombproof for protection of operating personnel.

(e) Battery cart (24 volt) for remote firing of rifle.

(f) Solenoid and solenoid adapter for mounting on 90mm rifle tube for remote firing.

(g) Sandbags (approximately 35). Provide mounting platform to simulate shoulder firing of rifle.

(2) Procedure

Twenty inert loaded (to maximum permissible design weight) rounds assembled with a propellant charge assessed to yield rated maximum pressure will be fired at 2 rounds per minute, the 20th round to be chambered for determination of cook-off potential. If no cook-off occurs after 30 minutes the round will be fired. In the second phase of the test 20 rounds will be fired at the fastest rate of fire possible. The 20th round is to be chambered for determination of cook-off potential. If no cook-off occurs after 30 minutes the round will be fired. Temperature rise and fall will be recorded throughout the test. The rifle will

CONFIDENTIAL

SUBJECT: Summer Environmental Test of Rifle, 90mm, T219E4, PAT (U)
10 March 1958

be mounted on sandbags at a height to simulate shoulder firing. A bombproof will be located as close as possible to the firing site for protection to the operating crew. Meteorological data will be recorded. The temperature of the rifle is not to exceed 800°F under either of the above tests. Should this temperature be reached, firing is to be halted and the cook-off round inserted in the chamber.

c. Defeat of Armor

(1) Facilities:

- (a) Six inch armor plate; 6' x 6' (larger piece desired for 300 yard firing).
- (b) Battery cart (24 volt) for remote firing of rifle.
- (c) Solenoid and solenoid adapter for mounting on 90mm rifle tube for remote firing.
- (d) Velocity instrumentation.
- (e) Bombproof
- (f) Gunner's Quadrant
- (g) Measuring devices for determining size and depth of penetration.

(2) Procedure

Thirty live loaded service rounds will be fired. Ten rounds at a range of 15 yards and 20 rounds (or ten good impacts) at a range of 300 yards. The 6 inch armor plate will be emplaced 64° from vertical at each of the two ranges. The rifle will be fired remotely from the integral ground mount. Elevation and deflection settings are to be made with the direct fire sight. Muzzle velocities and meteorological data will be recorded. ~~Ten~~ extra rounds are allocated for the 300 yard phase since it is anticipated that some rounds may miss the target. Report functioning characteristics of rounds which miss the target.

d. Graze Sensitivity

(1) Facilities:

- (a) Solenoid and solenoid adapter for mounting on 90mm rifle tube for remote firing.

CONFIDENTIAL

SUBJECT: Summer Environmental Test of Rifle, 90mm, T219E4, PAT (U)
10 March 1958

(b) Battery cart (24 volt) for remote firing of rifle.

(c) Bombproof.

(d) Firing site should be level terrain.

(2) Procedure

Ten live loaded service rounds (plus rounds not used in 300 yard plate firing phase) will be fired. The available rounds will be fired at a range of no less than 300 feet or more than 900 feet. The rifle will be fired remotely from the integral ground mount. Elevation and deflection settings are to be made with the direct fire sight. The rifle will be fired from level terrain; the height of the center of trunnion from the ground and the rifle elevation will be recorded for each round. Rifle elevation will be an approximate figure since no quadrant seat is provided on the rifle. Quadrant readings will be made from the same position on the tube for each range fired. Observation will be made relative to functioning on initial impact or ricochet impact. Meteorological data will be recorded.

d. General Functioning of Rifle and Ammunition

(1) Examine materiel upon arrival to ascertain whether or not any damage has been incurred en route.

(2) During the tests, examine the materiel in detail for evidence of interference under all conditions of operation, inconvenience or inefficiency of operation and malfunction or failure of parts.

(3) Determine if bright surfaces reflect so much light as to make the position of the rifle or ammunition obvious to hostile observers.

(4) Determine if any component that is affected by desert conditions can be further enclosed to make it less vulnerable to sand or dust.

(5) During the tests both still and motion pictures should be taken to illustrate pertinent characteristics of the weapon and ammunition.

(6) Record all phenomena pertinent to the rifle and ammunition throughout the summer test (exuding of projectile filler, stability of rifle, etc.)

CONFIDENTIAL

SUBJECT: Summer Environmental Test of Rifle, 90mm, T219E4, PAT (U)
10 March 1958

(7) The ammunition will be stored in the desert in fiber containers for two weeks prior to tests. One inert loaded round will be removed from its packaging and thermocouples will be attached to the cartridge case wall and in the propellant. The round will be exposed to desert conditions and temperatures will be recorded continuously for a period of 48 hours. It is planned that this round will be made available by reducing the number of rounds fired in the 300 yard accuracy phase to nine rounds.

4. It is suggested that your office maintain close liaison with Frankford Arsenal, Pitman-Dunn Laboratory, in regards to availability of rifle and ammunition. This office desires that the rifle be made available at an early date so that the rifle may be instrumented (thermocouple installed) before shipping to the test site. The solenoid and adapter will be shipped with the rifle. The most practical solution for preparation of the ammunition would be to provide Aberdeen with the components. The rounds could then be assembled as required and shipped to the test site.

/s/ G. Morrow
/t/ G. MORROW

CONFIDENTIAL

APPENDIX B

Firing Record

DEVELOPMENT AND PROOF SERVICES ABERDEEN PROVING GROUND, MARYLAND FIRING RECORD

Determination of the General
Functioning Characteristics of
the 90-mm, M67 Rifle and
Ammunition under Summer Desert
Environmental Conditions (U)

Firing Record No.: 2969
Dates of Test: 30 July to
9 September 1959
Authority: Ltr ORDBG-DP-DF dtd
29 February 1959

W. O. No. 392-303-26 dwk

MATERIEL (U)

Rifle, 90-mm, M67, No. 12.
Telescope, 1181, Serial No. 10.
Solenoid, 24 volt DC, 28 amps, and solenoid adapter (APG fabricated).

AMMUNITION (U)

Cartridge, 90-mm, HEAT, with Fuze, PI-BD, T278E7-3, Lot No. PA-E-28439.
Cartridge, 90-mm, HEAT, with Dummy Fuze, T278E7, and Inert Shell, Lot
No. PA-E-28440.
Cartridge, 90-mm, HEAT, with Dummy Fuze, inert-loaded, Lot No. APG-856.

ROUND-BY-ROUND DATA (C)

Recoil Balancing and Proof Firing
Pendulum Mount, Recoilless Range "B" (APG)
Rifle, 90-mm, M67, No. 12

30 July 1959

Coil Distances: Rifle to first - 23.26 feet Ambient Temperature: 83°F.
First to second - 26.20 feet Ammunition Conditioned to 70°F.

B-1

CONFIDENTIAL

CONFIDENTIAL

ROUND-BY-ROUND DATA (C) (Continued)

<u>Round No.</u>		<u>Time</u> <u>of</u> <u>Firing</u>	<u>Shell</u> <u>Wt, lb</u>	<u>Muzzle</u> <u>Velocity,</u> <u>fps</u>	<u>Recoil</u>		<u>Prop.</u> <u>Charge</u> <u>Wt, oz</u>
<u>Test</u>	<u>Rifle</u>				<u>inches</u>	<u>lb-sec</u>	
1	1	0915	6.77	719	4.4	5.59	22.47
2	2	1130	6.78	700	3.0	3.81	22.47
3	3	1140	6.78	699	3.4	4.31	22.47
4	4	1142	6.83	714	3.5	4.44	22.47
5	5	1155	6.80	---	---	---	22.47
6	6	1201	6.79	708	4.0	5.08	22.47
7	7	1202	6.82	933	5.7	7.24	26.50
8	8	1204	6.73	961	4.6	5.84	26.50
9	9	1206	6.74	942	4.8	6.10	26.50
10	10	1354	6.78	711	2.4	3.05	22.47
11	11	1355	6.79	686	2.1	2.67	22.47

- Notes: 1. Round No. 5 was fired from a ground mount.
 2. Subsequent to firing round 1 the breech was enlarged by grinding. The firing of three additional rounds showed the recoil to be slightly in excess of the value desired. Additional grinding was performed after firing round nine. The nozzle bar in the breech vent was ground as follows:

<u>Rd No.</u>	<u>Before Grinding</u>	<u>After Grinding</u>
1	0.829 inch	0.750 inch
9	----	.734 inch

- The above measurements indicate the average thickness of the nozzle bar before and after grinding.
 3. The following is a summary of the results:

<u>Rd No.</u>	<u>Avg Velocity, fps</u>	<u>Avg Recoil, lb-sec</u>
2, 3, 4, and 6	705	4.41
10 and 11	698	2.25

4. The rated maximum pressure of the weapon is 7780 psia. The charge used (26.50 ounces) for the proof rounds (7, 8, and 9) was obtained in earlier firings from a rifle modified for pressure instrumentation. The above charge (26.50 ounces) yielded a pressure 115 per cent of rated maximum pressure or proof pressure.
 5. Ammunition components for the above firings (test round 1 through 11) were as follows:

Case, Cartridge, 90-mm, T115E5, Lot 7.
 Projectile, 90-mm, T249E6 (inert), Lot FAE-356-6.
 Propellant, T31, Lot PA-E-21394.

B-2

CONFIDENTIAL

CONFIDENTIAL

FR No. 2969

Primer, T116E2, no lot.

Cartridge, Igniter, Lot FA-P-303.

Cartridge Case Crimp, 16 ball, 1/16-inch diameter, 1500-pound pressure.

6. The measured deflection (inches) of the system was converted to momentum units through use of the following data.

Weight of suspended system: 251 pounds.

Period of pendulum: 3.21 seconds.

Conversion factor: 1.27 pound-seconds per inch.

Initial firing at Yuma Test Station
300-yard plate firing

4 September 1959

Rifle, 90-mm, M67, No. 12.

Cartridge, 90-mm, HEAT, T249E6, with Fuze, PI, BD, T278E7, Lot PAE 28439.

Plate No. 14000-2. Six-inch plate, 10 foot by 12 foot. 64° from vertical.

Coil Distances: Rifle to first - 42.57 feet

First to second - 21.30 feet

Rd No.	Time of Firing	MV, fps	Impact Location		Type of Penetr, in.	Entrance Diameter of Penetr, in.	Exit Diameter of Penetr, in.
			In. from Aiming Point	Vert Lat			
12	12	1033	712	Over			
13	13	1037	705	-46 /12	Complete	2-1/2 x 1-1/2	1-1/16 x 1-3/16
14	14	1041	708	Over			
15	15	1045	711	/32 /15	Complete	2-1/8 x 1-1/4	1 x 1-1/4
16	16	1048	701	/12 - 6	Complete	2 x 1-1/2	15/16 x 1-3/16
17	17	1057	703	/20 /16	Complete	2-1/4 x 1-1/2	15/16 x 1-1/4
18	18	1100	715	/38 /20	Complete	2-1/2 x 1-1/2	1 x 1-1/4
19	19	1103	715	/23 /29	Complete	1-3/4 x 1-1/8	3/4 x 1-1/8
20	20	1104	721	/34 /23	Complete	2 x 1-1/2	15/16 x 1-1/2
21	21	1108	721	/58 /30	Complete	2-1/4 x 1-1/2	1 x 1
22	22	1110	700	/2 /13	Complete	2 x 1-1/2	1 x 1-1/4
23	23	1112	715	/45 /23	Complete	2 x 1-1/4	1/2 x 3/4

Average ambient temperature: 94°F.

Rifle elevation: Round No. 12, 35 mils aiming point.

Round No. 13, 30 mils aiming point.

Round No. 14, 35 mils aiming point.

Round No. 15 through 23, 33 mils aiming point.

Notes: 1. Test rounds 14, 17 and 20 difficult to chamber. Attributed to bell-mouthed condition of case. This condition results from the

B-3

CONFIDENTIAL

CONFIDENTIAL

FR No. 2969

- crimping technique of the cartridge case to the round; i.e., large diameter of the ball crimp bell-mouths the case (16, 1/4-inch ball crimp).
2. Test round 21 difficult to chamber due to propellant residue in bore.
3. Gunner: Mr. Long, Yuma Test Station. Mr. Long was gunner for all firings conducted at Yuma.
4. Line of fire: 84° from north (applicable to all firings at Yuma Test Station). Firing position No. 15.
5. All firings conducted remotely except the 300-yard and 500-yard accuracy tests.

15-yard plate firing

8 September 1959

Rifle, ammunition, and plate position same as 4 September 1959.
Average ambient temperature: 95°F.

Rd No.		Time of Firing	MV, fps	Impact Location In. from Aiming Point Vert Lat	Type of Penetr, in.	Entrance Diameter of Penetr, in.	Exit Diameter of Penetr, in.
Test Rifle							
24	24	1011	Not recorded		Partial	2-1/8 x 1-1/8	Probe Depth 13
25	25	1015	Not recorded		Complete	2-1/2 x 1-3/4	1-1/8 x 7/8
26	26	1022	Not recorded		Complete	2-1/4 x 1-1/2	1-1/4 x 1
27	27	1025	Not recorded		Complete	2-1/8 x 1-1/4	3/4 x 1/2
28	28	1029	Not recorded		Complete	2 x 1-1/4	3/4 x 1/2
29	29	1033	Not recorded		Complete	2-1/8 x 1-1/4	1-1/4 x 7/8
30	30	1035	Not recorded		Complete	2-1/8 x 1-1/8	1-3/8 x 3/4
31	31	1036	Not recorded		Complete	2 x 1-3/8	7/8 x 5/8
32	32	1038	Not recorded		Complete	2-3/4 x 1-1/2	1-1/8 x 7/8
33	33	1040	Not recorded		Complete	2-1/4 x 1-1/2	1 x 1/2

(Test round 34 through 43 - Graze Functioning Phase.)

44	44	1131	Not recorded	Complete	2-3/8 x 1-1/2	1 x 7/8
45	45	1133	Not recorded	Complete	2-1/4 x 1-1/2	1-1/8 x 3/4
46	46	1136	Not recorded	Complete	2-1/4 x 1-5/8	1 x 1/2
47	47	1138	Not recorded	Complete	2-1/4 x 2	1 x 3/4
48	48	1139	Not recorded	Complete	2-1/4 x 1-1/4	1-1/4 x 3/4
49	49	1142	Not recorded	Complete	2-1/2 x 1-1/2	1-1/2 x 7/8
50	50	1144	Not recorded	Partial	2 x 1-1/2	Probe Depth 3-3/4
51	51	1145	Not recorded	Complete	2-1/4 x 1-1/2	1-1/4 x 7/8

- Notes:
1. Test round 24 and 50 - slight bulge on back of plate.
 2. Round 26 and 49 difficult to chamber due to bell-mouth condition of case.
 3. Round 32, case snug on extraction.
 4. Round 46 difficult to chamber due to propellant residue in bore.

R-4

CONFIDENTIAL

CONFIDENTIAL

FR No. 2969

Graze Functioning Test

Rifle and ammunition same as 4 September 1959.

Rifle elevation varied to obtain impacts between 50 yards and 300 yards.

Firing position to left of plate butts over relatively level desert terrain.

Average ambient temperature: 95°F.

Rd No.		Time of Firing	Impact Distance from Weapon (Approx), yd	Functioning on Initial Impact
Test	Rifle			
34	34	1058	50	Yes
35	35	1100	150	Yes
36	36	1107	150	Yes
37	37	1110	100	Yes
38	38	1115	200	Yes
39	39	1120	200	Yes
40	40	1122	300	Yes
41	41	1125	50	Yes
42	42	1127	75	Yes
43	43	1129	100	Yes

- Notes:
1. Round 39 - cartridge case difficult to extract.
 2. After firing round 41 it was noted that considerable dust and sand was accumulating in the chamber and breech. Accumulation of sand and dust in the breech and hinge mechanism made it difficult to open the breech sufficiently to extract and chamber rounds. Upon conclusion of this test the rifle breech and hinge mechanism was lubricated. Subsequent operation was satisfactory. The accumulation of dust and sand appeared to occur after firing a sufficient number of rounds to break the desert crust (hard-soil). After firing several rounds it was also noted that the rifle bipod legs and monopod leg would settle through the crust resulting in the rifle bore being very close to ground level.

500-yard accuracy and time of flight.

Rifle, 90-mm, M67, No. 12.

Cartridge, 90-mm, HEAT, (inert), T249E6, with Inert Fuze, T278E7, Lot No. PA-E-28440.

Average ambient temperature: 102.5°F

Rd No.		Time of Firing	MV, fps	Impact Location Inches from Aiming Point		Time of Flight, sec
Test	Rifle			Vert	Lat	
52	52	1545	742	78	- 6	Lost
53	53	1548	739	-39	-17	2.18316
54	54	1550	728	-45	-22	2.1387
55	55	1552	715	-72	-36	2.24480

B-5

CONFIDENTIAL

CONFIDENTIAL

PR No. 2969

Pd No. Test Rifle	Time of Firing	MV, fps	Impact Location Inches from Aiming Point		Time of Flight, sec
			Vert	Lat	
56	56	1555	732	- 2 -16	2.20070
57	57	1556	748	-25 -20	2.15285
58	58	1558	Lost	Hit coil.	-----

- Notes: 1. Rifle elevation: Round 52, 55 mils aiming point.
Round 53 through 61, 50 mils aiming point.
2. Coil Distances: Rifle to first - 32.54 feet.
First to second - 25.11 feet.
Time of flight measured from first coil to a point 87.25 inches in front of the vertical target. Sky screens were used to obtain the stop signal on the time of flight (located 87.25 inches in front of target).
3. Round 54 difficult to chamber attributed to bell-mouth condition of cartridge case.
4. Round 58 difficult to chamber initially due to propellant residue in bore.

Continuation of 500-yard accuracy and time of flight.
Average ambient temperature: 87°F.

9 September 1959

59	59	0935	713	-55	/18	2.24727
60	60	0934	723	-42	/10	2.21960
61	61	0936	716	-70	/16	2.24267

- Notes: 1. Coil distances: Rifle to first - 32.44 feet.
First to second - 25.06 feet.
2. Breech and hinge mechanism lubricated prior to commencement of firing.

300-yard accuracy and time of flight

Rifle, 90-mm, M57, No. 12.

Cartridge, 90-mm, HEAT (inert), T249E6, with Inert Fuze, T278E7, Lot PA-E-28440

Average ambient temperature: 91°F.

62	62	1015	707	-11	/ 8	1.29620
63	63	1017	722	- 1	/ 9	1.26908
64	64	1019	711	- 7	/ 3	1.29137
65	65	1022	714	-11	- 1	1.28675
66	66	1024	721	0	/ 3	1.27243
67	67	1026	702	-19	/17	1.30715
68	68	1030	704	-18	0	1.30299
69	69	1032	713	- 9	/ 1	1.28645
70	70	1034	702	-27	- 7	Lost

B-6

CONFIDENTIAL

CONFIDENTIAL

FR No. 2969

- Notes: 1. Rifle elevation, 30 mils on aiming point.
2. Coil distance: Rifle to first - 30.86 feet.
First to second - 21.42 feet.
Time of flight measured from first coil to point 87.25 inches in front of the vertical target.
3. Round 68 would not chamber initially due to propellant residue in the bore.
4. Subsequent to firing round 70 the rifle breech mechanism was disassembled, cleaned and lubricated. The interior of the breech was found to be relatively clean of dust and sand. Examination of the assembly revealed no damaged or broken components. The retaining screws in the hinge were found to be loose. It appeared that the locking wire in the retaining screws had not been installed properly, thus allowing the screws to become loose.

Temperature rise and cook-off test.

Rifle, 90-mm, M67, No. 12.

Cartridge, 90-mm, HEAT, (inert), T249E6, with Inert Fuze, T278E7, Lot APG-856.

Average ambient temperature: 102°F.

Rd No.		Time of	Remarks
Test	Rifle	Firing	
71	71	1412	
72	72		
73	73		
74	74		
75	75		
76	76		
77	77		
78	78		
79	79		
80	80		
81	81		
82	82		
83	83		
84	84		
85	85		
86	86		
87	87		
88	88		
89	89	1421:30	
90	90		Inserted cook-off round 1422. Fired round 90 at 1452 hours. The round did not cook off.

Summary	
Thermo-couple Position	Max Temp. Recorded, °F
1	245
2	205
3	275
4	274
5	263
6	205

B-7

CONFIDENTIAL

CONFIDENTIAL

PR No. 2969

Notes: 1. Thermocouple Positions:

<u>Position</u>	<u>Inches from Rear Face of Tube</u>
1	24.0
2	18.5
3	16.5
4	10.0
5	4.5
6	19.25 (on face shield)

2. Maximum temperature 275°F, position 3.
3. Breech mechanism difficult to operate at conclusion of test.
Gunner observed breech became increasingly hard to operate toward the latter part of the test.
4. Rifle mounted approximately 4 feet off the ground on ammunition boxes. Fired at a rate of 2 rounds per minute for 9.5 minutes.
5. Breech mechanism was lubricated prior to commencement of next test phase.

Continuation of temperature rise and cook-off test.
Average ambient temperature: 102.5°F.

<u>Rd No.</u>		<u>Time of Firing</u>	<u>Remarks</u>	<u>Summary</u>	
<u>Test</u>	<u>Rifle</u>			<u>Thermo- couple Position</u>	<u>Max Temp. Recorded, °F</u>
91	91	1511		1	255
92	92			2	200
93	93			3	285
94	94			4	288
95	95			5	252
96	96		30-second delay. Cartridge case crimp did not hold round in case when the round was chambered. Removed round and chambered another round.	6	195
97	97				
98	98				
99	99				
100	100				
101	101				
102	102		20-second delay. Some difficulty as experienced with round 96.		
103	103				
104	104				
105	105	1515:30			

B-8

CONFIDENTIAL

CONFIDENTIAL

FR No. 2969

<u>Rd No.</u>	<u>Test Rifle</u>	<u>Time of Firing</u>	<u>Remarks</u>
106	106		Inserted cook-off round 1516. Fired round 106 at 1550 hours. The round did not cook off. (Rate of fire, 4.2 rounds per minute for 3.6 minutes.)
107	107	1553	
108	108	1555	
109	109	1557	
110	110	1600	

- Notes:
1. Maximum temperature 288°F, position 4.
 2. It was initially planned to fire test rounds 91 through 109 as fast as possible. However, difficulties prevented this and after test round 106 was fired the remaining rounds were expended and were not considered part of the cook-off test.
 3. After firing it was noted that the monopod retaining screw was loose.
 4. The rifle was disassembled and cleaned on 10 September 1959. The small retracting pin inside the hammer (pin which retracts the striker) was sheared. The jam pin end of the cocking lever was slightly burred and mushroomed. All other components of the breech appeared to be satisfactory.
 5. The rounds used in the temperature-rise and cook-off test were APG-assembled. It was found that the cartridge-case crimp was inadequate to retain the round when the cartridge was chambered rapidly.

This firing record forms a part of the 533rd Report on Ordnance Project No. TB5-1401, 10th Report on Ordnance Project No. TS4-4018, 7th Report on Ordnance Project No. TS4-4218.

SUBMITTED:



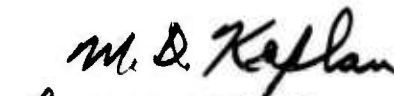
G. T. WATSON
Project Engineer

REVIEWED:



C. MORROW
Chief, Mortar and
Recoilless Rifle Branch

APPROVED:


for H. A. BECHTOL
Chief, Artillery
Division

B-9

CONFIDENTIAL

APPENDIX C
Temperature Data on exposed
Cartridge and Meteorological Data

SIGNAL CORPS MET TEAM YUMA
YUMA TEST STATION
YUMA, ARIZONA

DATE 21 Aug 1959

SUBJECT: METEOROLOGICAL DATA

TO: COMMANDING OFFICER
ORDNANCE TEST ACTIVITY
ASA TEST DIVISION
ATTN: 1R AMEND

1. Inclosed herewith is (Raw) & (Processed) meteorological data for period
1500 12 Aug through 0540
(time) (date) (time)
21 Aug 1959 as taken from the satellite weather
(date) (year)
station at 90 mm PAT
(location)

data includes: (X) temperature
() relative humidity
() soil temperature
() wind data
() pressure
()

2. The following information is considered of special interest:

Thermo # 1 Temp ranged from 73 to 125°
Thermo # 2 Temp ranged from 77 to 125° F

Therm # 1 : Pt no 1 on chart / Cartridge Case
Thermo # 2 : Pt no 9 on chart / Propellant

3. Acknowledgement of receipt by indorsement hereon is requested.

2 Incls attached.

Martin O. F. Schroeder
for MARTIN O. F. SCHROEDER
Major Signal Corps
Commanding

FROM:

1st Ind.

TO: Commanding Officer, Signal Corps Met Team Yuma, Yuma Test Station, Yuma,
Ariz.
Phone No. 2181
Receipt acknowledged.

DAILY TABULATED THERMOCOUPLE READINGS

PROJECT: 90 mm PAT

THERM. NO.	THERMOCOUPLE READINGS (°F.)											
	MINIMUM			MAXIMUM			MINIMUM			MAXIMUM		
	TIME	TEMP	HRS	TIME	TEMP	HRS	TIME	TEMP	HRS	TIME	TEMP	HRS
DATE: 12 Aug 59												
1				1500	119	95	0600	85	m	1215	125	97
2				1600	120	99	0600	89	m	1215	124	102
3												
4												
5												
6												
DATE: 14 Aug 59												
1	0400	87	113	1330	121	93	0500	81	112	1400	120	93
2	0400	91	116	1830	119	97	0500	85	113	1400	118	97
3												
4												
5												
6												
DATE: 16 Aug 59												
1	0530	83	120	1230	122	94	0540	85	93	1300	117	86
2	0530	87	125	1000	125	97	0540	88	93	1320	113	89
3												
4												
5												
6												
DATE: 18 Aug 59												
1	0550	82	106	1420	118	85	REMARKS:					
2	0550	85	105	1520	114	90						
3												
4												
5												
6												

DAILY TABULATED THERMOCOUPLE READINGS

PROJECT: 90 mm PAT

THERM. NO.	THERMOCOUPLE READINGS (°F.)											
	MINIMUM			MAXIMUM			MINIMUM			MAXIMUM		
	TIME	TEMP	HRS	TIME	TEMP	HRS	TIME	TEMP	HRS	TIME	TEMP	HRS
DATE:	19 Aug 59						20 Aug 59					
1	0540	79	107	1155	116	86	0540	73	112	1150	116	87
2	0550	83	109	1155	114	90	0540	77	114	0930	122	91
3												
4												
5												
6												
DATE:	21 Aug 59											
1	0540	82										
2	0540	86										
3												
4												
5												
6												
DATE:												
1												
2												
3												
4												
5												
6												
DATE:							REMARKS:					
1												
2												
3												
4												
5												
6												

SIGNAL CORPS MET TEAM YUMA
YUMA TEST STATION
YUMA, ARIZONA

DATE 7 SEPT 1959

SUBJECT: METEOROLOGICAL DATA

TO: COMMANDING OFFICER
ORDNANCE TEST ACTIVITY ASA
ATTN: MR. AMEND

1. Inclosed herewith is (Raw)& (Processed) meteorological data for period
1000 21 AUG through 1000
(time) (date) (time)
1 SEPT 1959 as taken from the satellite weather
(date) (year)
station at 90 MM PAT
(location)

data includes: (X) temperature
() relative humidity
() soil temperature
() wind data
() pressure
()
()

2. The following information is considered of special interest:

TEMP THERMO # 1 RANGED FROM 77°F TO 135°F
2 " " 83°F " 134°F

PRINT # 1 ON CHART OUTSIDE SHELL
2 " " INSIDE PROPELLANT

3. Acknowledgement of receipt by indorsement hereon is requested.

2 Incls attached.

M. O. F. Schroeder
MARTIN O. F. SCHRÖEDER
for Major Signal Corps
Commanding

FROM: 1st Ind.

TO: Commanding Officer, Signal Corps Met Team Yuma, Yuma Test Station, Yuma,
Ariz.
Phone No. 2181
Receipt acknowledged.

DAILY TABULATED THERMOCOUPLE READINGS

PROJECT: 90 MM PAT

THERM. NO.	THERMOCOUPLE READINGS (°F.)											
	MINIMUM			MAXIMUM			MINIMUM			MAXIMUM		
	TIME	TEMP	HRS	TIME	TEMP	HRS	TIME	TEMP	HRS	TIME	TEMP	HRS
DATE: 21 AUG 1959												
1			111	1245	120	91	0520	82	118	1430	123	93
2			114	1245	115	94	0520	88	122	1015	122	97
3												
4												
5												
6												
DATE: 22 AUG												
1	0235	84	118	1150	124	87	0515	79	117	1300	124	91
2	0300	87	123	1130	125	90	0550	83	120	1200	123	97
3												
4												
5												
6												
DATE: 23 AUG												
1	M	M	114	1315	124	95	0510	79	120	1100	126	95
2	M	M	117	1250	123	99	0515	83	125	1100	128	100
3												
4												
5												
6												
DATE: 24 AUG												
1	0510	85	118	1445	123	92	REMARKS:					
2	0525	88	120	1115	122	97						
3												
4												
5												
6												

DAILY TABULATED THERMOCOUPLE READINGS

PROJECT: 90NM PAT

THERMOCOUPLE READINGS (°F.)				
NO.	MINIMUM TIME TEMP HRS	1500 MAXIMUM TIME TEMP HRS	2200 MINIMUM TIME TEMP HRS	1000 MAXIMUM TIME TEMP HRS
DATE:	28 AUG 1959		1 SEPT 1959	
1	0500 80 115	1350 133 93	0610 77 114	
2	0600 85 120	1130 122 98	0615 85 133	1050 134
3				
4				
5				
6				
DATE:	29 AUG			
1	0430 86 121	1320 133 94		
2	0500 91 128	1040 129 100		
3				
4				
5				
6				
DATE:	30 AUG			
1	0540 82 116	1415 135 95		
2	0610 88 121	1500 127 102		
3				
4				
5				
6				
DATE:	31 AUG		REM. RKS:	
1	0610 80 118	1325 132 96		
2	0615 87 127	0915 129 103		
3				
4				
5				
6				

SIGNAL CORPS MET TEAM YUMA
YUMA TEST STATION
YUMA, ARIZONA

DATE 9 SEPT 1959

SUBJECT: METEOROLOGICAL DATA

TO: COMMANDING OFFICER
ORDNANCE TEST ACTIVITY A&A
ATTN: MR. AMEND

1. Inclosed herewith is (Raw) & (Processed) meteorological data for period

1000 (time) 1 SEPT (date) through 1000 (time)
4 SEPT (date) 1959 (year) as taken from the satellite weather
station at 90 MM PAT (location)

data includes: (X) temperature
() relative humidity
() soil temperature
() wind data
() pressure
()
()

2. The following information is considered of special interest:

TEMP THERMO # 1 RANGED FROM 71°F TO 130°F
" " # 2 " " 79°F " 132°F

PRINT 1 ON chart equals outside cartridge case
" 9 " " " inside propellant

3. Acknowledgement of receipt by indorsement hereon is requested.

2 Incls attached.

M. O. F. Schroeder
MARTIN O. F. SCHROEDER
Major Signal Corps
Commanding

FROM: 1st Ind.

TO: Commanding Officer, Signal Corps Met Team Yuma, Yuma Test Station, Yuma,
Ariz.
Phone No. 2181
Receipt acknowledged.

DAILY TABULATED THERMOCOUPLE READINGS

PROJECT: 90 MM PNT

THERMOCOUPLE READINGS (°F.)				
NO.	MINIMUM TIME TEMP HRS	1000 MAXIMUM TIME TEMP HRS	2000 MINIMUM TIME TEMP HRS	3000 MAXIMUM TIME TEMP HRS
DATE: 1 Sept 1959			2 Sept 1959	
1		1410 129 93	0630 77 115	1030 130 88
2		1530 125 101	0630 85 129	1250 132 97
3				
4				
5				
6				
DATE: 3 Sept 1959			4 Sept 1959	
1	0530 75 112	1220 126 87	0500 71	
2	0530 81 124	1030 127 92	0530 79	
3				
4				
5				
6				
DATE:				
1				
2				
3				
4				
5				
6				
DATE:			REMARKS:	
1				
2				
3				
4				
5				
6				

SIGNAL CORP MET TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD SLUG. T-2700 ELV 324 FT.

DATE- 12 August 1959

	TEMP. OF	DEW POINT OF	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. °F	STATION PRESSURE (HRS)	TEMPERATURE
								MAXIMUM 106
								MINIMUM 80
								MEAN 93
0100	84.5	69	60	110	5	86.8	999.6	
0200	84.0	70	62	110	6	85.3	999.6	
0300	83.3	70	64	135	5	84.9	999.6	RELATIVE HUMIDITY
0400	83.0	70	64	135	7	84.3	999.9	MAXIMUM 68
0500	82.1	69	65	135	6	83.3	999.6	MINIMUM 30
0600	81.1	70	68	135	7	82.7	999.8	MEAN 49
0700	81.9	70	68	135	6	83.2	1000.5	PREVAILING VISIBILITY (SUNRISE-SUNSET)
0800	84.9	70	61	135	9	85.2	1000.8	33 Miles
0900	88.8	70	54	160	7	94.2	1001.0	24 HOUR PRECIPITATION
1000	91.9	70	50	160	7	103.3	1001.0	None
1100	95.6	68	41	160	9	111.3	1001.0	PREVAILING SKY COVER (SUNRISE-SUNSET)
1200	97.6	68	39	200	3	120.1	1000.6	
1300	100.2	70	38		0	126.0	999.8	1 - Clear
1400	102.2	68	33	90	6	126.4	999.1	YUMA USWB DAILY NORMAL TEMPERATURE
1500	105.0	68	31	225	9	129.2	998.1	
1600	104.2	66	30	250	9	125.5	996.9	MAXIMUM 107
1700	105.0	67	30	225	7	121.0	996.1	MINIMUM 82
1800	104.0	67	31	225	8	114.2	995.5	MEAN 95
1900	100.0	73	42	270	9	106.0	995.4	PREVAILING WIND
2000	98.0	72	43	270	9	102.0	995.4	SE 7 MPH.
2100	95.5	70	43	225	10	98.0	996.1	DAILY PEAK WIND GUST
2200	94.5	66	39	225	13	96.8	996.7	SW 22 MPH
2300	94.0	65	38	225	12	95.0	996.9	1450 MST.
2400	94.0	65	39	180	7	94.0	996.9	

Sunset: 1925 13 August 1959 Sunrise: 0601 14 August 1959

Forecast for 13 and 14 August 1959:

Generally clear with few scattered afternoon and evening cumulus clouds. Little change in temperature and humidity. Winds Southerly 5 - 12 MPH.

High today 107 Low tonight 84 High tomorrow 108

Outlook for Saturday:

Generally clear with little temperature change.

High 107 - 110 C-9 Low 83 - 86

SIGNAL CORP. TEST YEAR 1959
 TEST STATION YUMA, ARIZONA
 MEASUREMENT DATA SECOND BLAD. 7-2760 REV 304 FT.

DATE: 11 August 1959

	W.P. °F	DEW POINT °F	REL. HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. °F	STATION PRESSURE (MBS)	TEMPERATURE
								MAXIMUM 107 MINIMUM 83 MEAN 95
0100	91.9	66	42		C	92.2	996.9	
0200	89.3	67	49		C	91.1	996.7	
0300	88.3	68	50		C	89.9	996.6	RELATIVE HUMIDITY
0400	87.4	65	48	360	1	88.6	996.6	MAXIMUM 14 MINIMUM 38 MEAN
0500	84.9	66	53	135	2	87.6	997.1	
0600	85.2	65	52		C	86.4	997.2	PREVAILING VISIBILITY (SUNRISE-SUNSET) 39 Miles
0700	84.2	70	62		C	88.0	997.7	
0800	84.3	70	55		C	89.3	998.1	
0900	85.5	70	54	180	1	100.3	998.3	24 HOUR PRECIPITATION None
1000	83.6	72	49	110	1	109.0	998.4	
1100	81.2	72	43	135	7	117.1	997.9	PREVAILING SKY COVER (SUNRISE-SUNSET) 3 - Clear
1200	80.1	72	41	180	7	122.9	997.9	
1300	101.1	71	38	225	10	126.9	997.2	YUMA USWB DAILY NORMAL TEMPERATURE
1400	104.8	71	38	180	7	128.0	996.4	MAXIMUM 107 MINIMUM 82 MEAN 95
1500	103.8	68	31	225	7	128.0	995.5	
1600	105.7	64	26	200	9	125.0	994.2	PREVAILING WIND SSW 6 MPH.
1700	104.9	45	14	200	9	120.7	993.0	
1800	104.5	47	14	200	9	112.8	992.5	DAILY PEAK WIND GUST SSW 30 MPH. 2104 EST.
1900	102.0	52	19	200	7	105.1	992.5	
2000	96.4	65	36	200	16	100.6	993.0	
2100	93.9	61	33	200	21	97.8	994.2	
2200	90.1	64	42	200	18	94.9	994.7	
2300	88.7	68	50	200	10	92.9	994.9	
2400	83.4	63	43	200	6	91.0	995.0	

Sunset: 1924 14 August 59 Sunrise: 0601 15 August 59
 Forecast for 14 and 15 August 1959:
 Clear to scattered high cloudiness today through Saturday.
 Southerly winds 5 - 12 MPH. 0900 - 2100 hours today and Saturday.
 Slightly higher daytime temperatures.

High today 106 Low tonight 81 High tomorrow 108

Outlook for Sunday:
 Clear to scattered high cloudiness. Little temperature change.

High 107 - 110 Low 81 - 84

SIGNAL CORP MET TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 ELEV 324 FT.

DATE- 14 August 1959

	TEMP. OF	DEW POINT OF	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. F	STATION PRESSURE (MBS)	TEMPERATURE
0100	86.3	67	53	315	2	89.6	995.0	MAXIMUM 103 MINIMUM 80 MEAN 92
0200	84.7	67	56	90	5	87.9	995.0	
0300	84.4	69	59		0	86.8	994.9	RELATIVE HUMIDITY
0400	83.0	68	60		0	85.8	994.9	MAXIMUM 68 MINIMUM 31 MEAN 50
0500	82.5	70	65	135	2	85.1	994.9	
0600	82.0	70	68		0	84.4	995.0	
0700	83.2	71	60	180	2	85.4	995.7	PREVAILING VISIBILITY (SUNRISE SUNSET)
0800	85.8	73	65	160	2	86.8	996.4	35 Miles
0900	87.8	73	61	180	5	97.8	996.6	24 HOUR PRECIPITATION
1000	91.1	63	40		0	107.0	996.6	None
1100	92.0	70	48	160	6	116.1	997.1	
1200	95.0	69	44	135	7	124.4	996.9	PREVAILING SKY COVER (SUNRISE SUNSET)
1300	96.9	70	41		0	131.0	996.4	2 - Clear
1400	97.8	68	38	180	8	118.1	995.5	
1500	98.8	68	37	135	5	120.9	994.5	YUMA USWB DAILY NORMAL TEMPERATURE
1600	100.4	67	34	200	15	123.2	993.5	MAXIMUM 106 MINIMUM 82 MEAN 94
1700	101.0	66	32	225	13	117.8	992.5	
1800	98.7	63	31	200	13	108.9	992.2	
1900	96.1	61	32	200	15	103.2	992.5	PREVAILING WIND
2000	94.3	65	38	200	14	98.3	993.0	SSW 6 MPH.
2100	92.7	64	39	200	12	95.9	993.9	DAILY PEAK WIND GUST
2200	90.7	58	33	225	12	93.7	994.4	SW 21 MPH. 1657 MST.
2300	88.5	61	39	200	8	92.8	995.4	
2400	86.2	62	44	225	5	89.7	995.7	

Sunset: 1923 15 August 59

Sunrise: 0602 16 August 59

SIGNAL CORP MET TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 ELV 324 FT.

DATE- 15 August 1959

	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	84.7	61	44	200	2	87.8	995.9
0200	83.2	60	46	135	2	86.1	995.9
0300	80.8	61	48		0	84.8	995.9
0400	82.0	61	49	360	5	84.2	996.1
0500	81.6	64	55	20	2	83.3	996.1
0600	81.2	67	63		0	82.7	996.7
0700	79.9	67	64		0	83.4	997.4
0800	84.2	68	59		0	85.1	997.7
0900	86.9	72	61	180	7	96.9	998.4
1000	89.4	72	56	180	8	106.4	998.6
1100	96.9	71	51	160	2	117.1	998.8
1200	94.2	69	43	135	7	124.5	998.4
1300	97.2	67	37	90	5	129.6	997.7
1400	93.2	66	35	135	6	130.7	997.1
1500	99.9	66	33	180	6	128.9	996.1
1600	101.0	64	30	180	9	127.5	995.2
1700	99.9	64	31	225	12	119.1	994.4
1800	98.8	65	33	180	10	109.9	994.4
1900	97.6	63	32	200	9	104.0	994.5
2000	94.9	65	37	225	10	100.0	994.9
2100	93.2	65	40	200	13	97.9	995.4
2200	90.2	68	49	200	15	94.9	996.1
2300	89.2	69	52	200	9	93.5	996.2
2400	89.3	67	48	200	10	92.2	996.7

TEMPERATURE

MAXIMUM 103
MINIMUM 75
MEAN 89

RELATIVE HUMIDITY

MAXIMUM 64
MINIMUM 30
MEAN 47

PREVAILING
VISIBILITY
(SUNRISE-SUNSET)
33 Miles

24 HOUR
PRECIPITATION
None

PREVAILING
SKY COVER
(SUNRISE-SUNSET)
2 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 106
MINIMUM 82
MEAN 94

PREVAILING WIND
SSW 6 MPH.

DAILY PEAK WIND GUST
WSW 17 MPH.
1700 MST.

Sunset: 1922 16 August 59 Sunrise: 0603 17 August 59

WELL TONY STATION 1911, ARIZONA
WEATHER DATA RECORD BLANK, 1-27-50 REV 324 FT.

DATE- 16 August 1959

	TEMP. °F	DEW POINT °F	REL. HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	86.9	62	43	270	7	91.2	996.7
0200	85.9	55	34	225	12	89.8	996.7
0300	85.9	53	39	225	9	88.9	996.7
0400	82.8	64	52	315	3	87.0	996.7
0500	83.0	63	51	90	2	86.9	997.4
0600	82.9	62	50	90	2	85.9	997.6
0700	84.1	61	46	45	6	87.0	998.1
0800	85.9	61	42	135	2	88.0	998.4
0900	89.9	61	39	135	6	100.9	998.8
1000	92.9	58	31		0	110.6	998.6
1100	95.5	62	33		0	121.3	998.4
1200	90.9	61	29		0	128.3	997.7
1300	100.1	64	31	180	2	133.6	997.1
1400	102.0	66	31	225	12	135.6	996.4
1500	100.9	67	33	270	10	131.2	995.5
1600	100.8	65	32	270	9	129.5	994.5
1700	100.0	68	36	270	8	123.5	993.9
1800	100.0	63	35	270	8	114.0	993.9
1900	97.2	67	38	250	8	106.2	993.5
2000	95.5	66	33	250	12	102.0	993.9
2100	94.8	65	37	250	9	99.0	994.4
2200	93.0	67	42	225	13	97.0	994.9
2300	92.0	66	43	225	12	95.0	994.9
2400	90.4	67	46	225	8	93.9	995.2

TEMPERATURE

MAXIMUM 103
MINIMUM 82
MEAN 93

RELATIVE HUMIDITY

MAXIMUM 52
MINIMUM 29
MEAN 41

PREVAILING VISIBILITY (SUNRISE-SUNSET)

39 Miles

24 HOUR PRECIPITATION

None

PREVAILING SKY COVER (SUNRISE SUNSET)

1 - Clear

YUMA USWB DAILY NORMAL TEMPERATURE

MAXIMUM 106
MINIMUM 81
MEAN 94

PREVAILING WIND

SW 7 MPH.

DAILY PEAK WIND GUST

W 18 MPH.
1432 MST.

Sunset: 1921 17 August 1959 Sunrise: 0603 18 August 1959

Forecast for 17 - 18 August 1959:

SPECIAL THUNDERSTORM ADVISORY !

Scattered to broken cumulus 7000 feet with scattered showers and thunderstorms today and Tuesday. Gusty winds 20 to 40 miles per hour at times during thunderstorms. Cooler today.

High today 98 Low tonight 77 High tomorrow 100

Outlook for Wednesday:

Decreasing cloudiness and slightly warmer.

High 100 - 103 Low 76 - 79

17 August 1959

		TEMP (F)	REL. HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SEA. WIND (KTS)	STATION PRESSURE (INCH)	TEMPERATURE MAXIMUM 100 MINIMUM 74 MEAN 87
0100	89.6	67	47	180	8	92.6	995.2	
0200	87.8	60	41		0	91.8	995.2	RELATIVE HUMIDITY
0300	86.2	68	55		0	90.4	995.2	
0400	85.8	67	53	270	3	89.8	995.2	MAXIMUM 68 MINIMUM 37 MEAN 53
0500	84.2	66	54	315	1	88.8	995.2	
0600	82.8	66	56	360	1	87.6	995.4	PREVAILING VISIBILITY (SUNRISE-SUNSET) 33 Miles
0700	84.0	65	53	315	1	88.4	995.5	
0800	86.1	65	50		0	90.0	996.4	24 HOUR PRECIPITATION 0.20 Inches
0900	86.6	65	49	180	21	91.3	997.2	
1000	81.2	69	66		0	84.2	997.2	
1100	86.7	68	53	135	5	91.5	997.2	PREVAILING SKY COVER (SUNRISE-SUNSET) 8 - Cloudy
1200	91.4	66	43	200	1	99.9	996.7	
1300	94.8	65	38	180	2	109.0	995.7	
1400	96.9	66	37	160	8	112.8	994.7	YUMA USWB DAILY NORMAL TEMPERATURE
1500	98.2	69	33	160	21	112.7	994.4	MAXIMUM 106 MINIMUM 81 MEAN 94
1600	87.5	74	64	135	12	101.2	994.2	
1700	92.0	69	47	135	13	100.0	994.4	PREVAILING WIND SE 6 MPH.
1800	92.0	69	47	135	12	98.8	993.9	
1900	88.0	70	54	180	7	88.0	993.7	DAILY PEAK WIND GUST SSE 32 MPH. 1514 MST.
2000	86.5	69	56	180	6	90.5	994.2	
2100	86.5	67	52	90	0	89.0	995.4	
2200	85.0	67	56	110	8	87.2	995.7	
2300	82.0	68	62	135	7	86.0	995.7	
2400	81.0	70	68	135	4	84.8	996.2	

Sunset: 1920 18 August 59 Sunrise: 0604 19 August 1959
 Forecast for 18 - 19 August 1959:
 Scattered cumulus 6000 feet today and tomorrow followed by clearing
 at night. Southerly winds 8 - 15 MPH. 1000 - 2000 hours today and Wednesday.
 Little change in temperature.

High today 101 Low tonight 77 High tomorrow 103

Outlook for Thursday:
 Scattered cloudiness. Little change in temperature.

High 103 - 106 Low 77 - 80

YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD REG. 7-27000 ELV 324 FT.

DATE- 18 August 1959

	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. °F	STATION PRESSURE (MBS)	TEMPERATURE MAXIMUM 100 MINIMUM 77 MEAN 89
0100	80.4	70	69	135	3	84.1	996.2	
0200	80.2	70	72	135	5	83.5	996.2	RELATIVE HUMIDITY MAXIMUM 78 MINIMUM 18 MEAN 48
0300	82.8	70	72	135	5	82.8	996.2	
0400	79.4	70	73	135	3	82.0	996.2	
0500	78.3	70	75	135	5	81.0	996.2	
0600	77.1	70	78	135	3	79.9	996.2	PREVAILING VISIBILITY (SUNRISE-SUNSET) 36 Miles
0700	78.2	70	76	135	2	80.2	996.9	24 HOUR PRECIPITATION None
0800	80.2	70	72	160	5	81.9	997.2	
0900	84.2	71	65	135	7	93.9	997.4	
1000	87.6	71	58	135	8	101.8	997.4	
1100	89.3	71	54	160	3	108.2	997.6	PREVAILING SKY COVER (SUNRISE-SUNSET) 4 - Ptlly Cldy
1200	92.1	70	49		0	115.8	997.2	
1300	94.3	71	46	160	8	120.8	996.7	
1400	97.0	68	40	200	5	124.2	995.9	YUMA USWB DAILY NORMAL TEMPERATURE MAXIMUM 106 MINIMUM 81 MEAN 94
1500	95.9	66	37	160	7	113.3	995.0	
1600	98.2	64	33	180	7	113.2	994.0	
1700	100.2	53	21	180	10	111.8	993.2	
1800	98.2	47	18	180	12	103.0	993.0	PREVAILING WIND SE 5 MPH.
1900	95.4	48	20	160	9	98.2	992.7	
2000	90.9	49	24	225	2	93.5	992.8	DAILY PEAK WIND GUST SSW 18 MPH. 1645 MST.
2100	89.1	50	26	180	2	90.4	993.3	
2200	86.9	52	31	180	2	88.6	994.0	
2300	84.9	53	33		0	86.3	994.5	
2400	84.4	53	34		0	85.1	994.9	

Sunset: 1919 19 August 59 Sunrise: 0604 20 August 59
Forecast for 19 - 20 August 1959:
Scattered afternoon cumulus 7000 feet today and Thursday.
Southerly winds 10 - 20 MPH. 1000 - 2000 hours today and Thursday.
Little change in temperature.

High today 103 Low tonight 78 High tomorrow 104

Outlook for Friday:
Partly cloudy with rising humidity. Little change in temperature.

High 99 - 102 Low 76 - 79

SIGNAL CORP JOINT TEAM TMA
 TEST STATION YUMA, ARIZONA
 WIND DATA RECORD BLG. T-2700 ELV 324 FT.

DATE- 19 August 1959

	THP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. °F	STATION PRESSURE (HRS)	TEMPERATURE
								MAXIMUM 99 MINIMUM 79 MEAN 89
0100	83.0	52	34	70	2	83.6	994.7	
0200	83.0	52	34	360	2	82.3	994.7	
0300	82.7	53	36		0	81.7	994.7	RELATIVE HUMIDITY
0400	80.8	55	41	45	4	80.4	994.7	MAXIMUM 57 MINIMUM 20 MEAN 39
0500	79.0	57	46	90	5	79.0	994.4	
0600	78.6	58	49	90	5	78.5	994.4	PREVAILING VISIBILITY (SUNRISE-SUNSET)
0700	79.0	60	53	90	3	78.9	994.9	31 Miles
0800	81.4	65	57	180	3	82.3	995.2	24 HOUR PRECIPITATION
0900	85.8	66	51	180	5	93.5	995.2	None
1000	88.8	61	40	180	3	103.1	995.2	
1100	92.5	60	34	225	14	110.4	995.5	PREVAILING SKY COVER (SUNRISE-SUNSET)
1200	94.4	59	31	180	8	116.8	995.4	1 - Clear
1300	96.2	57	27	160	16	118.4	994.7	
1400	98.8	51	20	180	21	119.3	994.4	YUMA USWB DAILY NORMAL TEMPERATURE
1500	96.2	56	26	200	18	118.5	994.0	MAXIMUM 106 MINIMUM 81 MEAN 94
1600	96.8	55	25	160	20	116.1	993.5	
1700	96.3	49	20	180	14	110.2	992.5	PREVAILING WIND
1800	95.0	52	24	180	14	104.2	992.2	S 10 MPH.
1900	92.4	52	25	200	18	96.3	992.0	DAILY PEAK WIND GUST
2000	89.8	53	29	180	7	92.0	992.3	SSW 29 MPH. 1410 MST.
2100	87.9	55	33	200	12	89.8	993.5	
2200	85.7	59	41	180	14	87.7	994.4	
2300	82.2	59	41	200	16	86.2	994.7	
2400	84.3	58	41	180	7	85.0	994.9	

Sunset: 1918 20 August 59 Sunrise: 0605 21 August 59

Forecast for 20 - 21 August 1959:

Scattered afternoon cumulus 5000 feet today and Friday. Slightly cooler today. South southwesterly winds 5 - 15 MPH. 1000 - 2000 hours today and tomorrow.

High today 95 Low tonight 72 High tomorrow 97

Outlook for Saturday:

Clear to scattered cloudiness. Little change in temperature.

High 96 - 99 Low 73 - 76

SIGNAL CORP MET TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLOC. T-2700 ELV 324 FT.

DATE- 20 August 1959

	TEMP. OF	DEW POINT OF	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. OF	STATION PRESSURE (MBS)
0100	81.2	63	54	225	7	83.5	995.0
0200	81.0	59	48	225	9	82.2	995.2
0300	73.9	59	50	250	9	80.8	995.2
0400	77.0	53	43		0	79.5	995.4
0500	75.2	51	43	360	5	77.9	996.1
0600	74.9	51	43		0	76.5	996.6
0700	74.9	52	45		0	76.7	997.2
0800	78.1	51	39		0	80.5	997.9
0900	81.8	57	42	270	2	93.9	998.3
1000	84.9	56	40	180	3	103.4	998.4
1100	87.7	59	38	200	2	112.6	998.9
1200	91.8	58	33	225	12	117.6	998.3
1300	93.2	57	29	225	12	121.2	997.7
1400	95.0	53	24	250	12	123.2	997.4
1500	95.6	50	20	200	14	121.8	996.7
1600	97.1	46	17	180	12	117.8	996.4
1700	95.5	45	18	200	12	111.4	995.9
1800	95.0	50	22	180	13	103.3	995.9
1900	93.3	52	25	180	13	97.0	995.7
2000	90.0	59	35	200	12	92.3	995.9
2100	86.6	60	41	225	3	91.6	996.9
2200	84.8	64	51	200	8	89.0	997.4
2300	86.2	65	55	180	5	87.5	997.6
2400	85.3	65	50	180	2	86.9	997.6

TEMPERATURE

MAXIMUM 98
MINIMUM 74
MEAN 86

RELATIVE HUMIDITY

MAXIMUM 55
MINIMUM 17
MEAN 36

PREVAILING
VISIBILITY
(SUNRISE SUNSET)

3/4 Miles
24 HOUR
PRECIPITATION

None

PREVAILING
SKY COVER
(SUNRISE SUNSET)

0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 81
MEAN 94

PREVAILING WIND

S 7 MPH.

DAILY PEAK WIND GUST

SW 23 MPH.
1354 MST.

Sunset: 1917 21 August 59 Sunrise: 0600 22 August 59

Forecast for 21 - 22 August 1959:

SPECIAL THUNDERSTORM WARNING!

Scattered afternoon cumulus 6000 feet today and Saturday. Southerly winds 10 - 20 MPH. 1000 - 2000 hours today and Saturday. Scattered light showers or thunderstorms this afternoon and evening. Little change in temperature.

High today 100 Low tonight 78 High tomorrow 101

Outlook for Sunday:

Increasing cloudiness with little change in temperature.

High 97 - 100 Low 75 - 78

SIGNAL CORP MET TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 ELV 324 FT.

DATE- 21 August 1959

	TEMP. OF	DEW POINT OF	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. F	STATION PRESSURE (MBS)
0100	84.0	66	55		0	85.5	997.7
0200	83.9	65	53		0	85.9	997.7
0300	83.2	68	61		0	85.1	997.7
0400	83.2	69	61	180	2	84.1	997.9
0500	82.8	68	62		0	83.5	998.4
0600	82.2	70	65	180	2	83.2	998.8
0700	82.9	71	68	160	2	84.9	998.9
0800	85.6	72	63	135	5	89.4	999.6
0900	87.6	70	56	135	7	97.0	999.9
1000	90.1	69	50	160	12	107.8	999.9
1100	93.2	69	46		0	118.6	1000.1
1200	92.9	68	44	180	9	113.5	999.6
1300	95.8	67	40	180	12	112.5	998.9
1400	98.0	66	35	200	12	124.1	998.3
1500	99.0	62	30	180	9	121.2	997.6
1600	100.6	62	29	250	9	122.9	997.1
1700	99.0	61	29	180	8	117.0	996.2
1800	99.0	61	29	180	9	110.0	996.6
1900	93.0	66	41	90	13	101.0	996.7
2000	90.5	66	45	90	12	97.0	997.1
2100	90.0	65	44	90	2	94.5	997.7
2200	90.0	67	47	225	8	93.5	998.4
2300	88.8	67	49	225	7	92.0	998.9
2400	86.0	67	54	270	4	90.0	999.1

TEMPERATURE

MAXIMUM 102
MINIMUM 81
MEAN 92

RELATIVE HUMIDITY

MAXIMUM 68
MINIMUM 29
MEAN 49

PREVAILING
VISIBILITY
(SUNRISE SUNSET)
38 Miles

24 HOUR
PRECIPITATION
None

PREVAILING
SKY COVER
(SUNRISE SUNSET)
6 - Pcly Cldy

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 106
MINIMUM 81
MEAN 94

PREVAILING WIND
S - 6 MPH.

DAILY PEAK WIND GUST
SW 22 MPH.
1530 MST.

Sunset: 1916 22 August 59 Sunrise: 0606 23 August 59

SIGNAL CORP MET TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 ELV 324 FT.

DATE 22 August 1959

	TEMP. OF	DEW POINT OF	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH	SOIL TEMP. F	STATION PRESSURE (MBS)
0100	85.6	69	57		C	89.2	999.3
0200	84.9	59	59		C	88.0	999.3
0300	84.8	69	59		C	87.4	999.3
0400	83.3	68	60		C	86.2	999.4
0500	82.2	66	58	135	4	85.8	999.3
0600	82.1	66	59	135	2	84.9	999.4
0700	82.3	68	61	130	2	85.3	999.6
0800	86.8	67	55	315	2	94.2	999.8
0900	88.9	71	56	225	4	100.8	999.9
1000	91.2	71	52	315	2	111.8	1000.1
1100	91.8	71	51	270	3	120.2	1000.3
1200	91.6	71	52	270	7	124.6	1000.1
1300	96.2	68	40	270	5	132.0	999.3
1400	97.0	69	40	270	7	125.8	998.6
1500	97.0	67	38	270	10	119.0	998.1
1600	95.2	66	39	225	9	106.8	997.7
1700	92.0	71	51	225	13	103.0	996.7
1800	90.0	69	50	270	12	101.0	996.7
1900	89.0	68	50	270	9	97.0	996.7
2000	88.5	67	49	270	13	93.0	997.1
2100	85.5	70	61	225	7	91.0	997.4
2200	85.0	70	56	225	7	89.0	997.4
2300	84.9	66	54	225	7	88.0	996.7
2400	84.5	67	56	225	5	87.5	997.4

TEMPERATURE

MAXIMUM 100
MINIMUM 81
MEAN 91

RELATIVE HUMIDITY

MAXIMUM 61
MINIMUM 38
MEAN 50

PREVAILING
VISIBILITY
(SUNRISE-SUNSET)
36 Miles

24 HOUR
PRECIPITATION
None

PREVAILING
SKY COVER
(SUNRISE-SUNSET)
8 - Cloudy

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 105
MINIMUM 81
MEAN 93

PREVAILING WIND
W 5 MPH.

DAILY PEAK WIND GUST

SW 21 MPH.
1630 MST.

Sunset: 1914 23 August 59 Sunrise: 0607 24 August 59

WILLIAM J. WILSON
 1000 WEST 10TH ST. YUMA, ARIZONA
 W. J. WILSON, JR. 1000 WEST 10TH ST. YUMA, ARIZONA

23 August 1959

HR	TEMP. OF	DEW POINT OF	REL. HUMID. (%)	WIND DIR. REG.	WIND SPEED MPH	SOIL TEMP OF	STATION PRESSURE (MER)	TEMPERATURE
								MAXIMUM 102 MINIMUM 80 MEAN 91
0100	84.7	67	55	90	5	87.9	997.7	
0200	84.0	67	57		0	86.4	997.2	
0300	83.8	67	58	315	2	86.0	996.7	RELATIVE HUMIDITY
0400	82.7	67	60	270	6	85.4	996.7	MAXIMUM 68 MINIMUM 29 MEAN 49
0500	82.0	68	62		0	84.6	996.6	
0600	80.2	68	67		0	84.4	996.6	PREVAILING VISIBILITY (SUNRISE-SUNSET)
0700	80.7	69	68		0	87.6	997.5	39 Miles
0800	85.1	71	66		0	90.2	997.5	24 HOUR PRECIPITATION
0900	89.2	72	58	225	3	99.4	997.9	None
1000	90.8	66	45	180	6	109.8	997.9	PREVAILING SKY COVER (SUNRISE-SUNSET)
1100	94.2	65	39	180	2	118.6	998.3	4 - Ptlly Cldy
1200	97.9	65	34	270	7	127.0	997.9	YUMA USWB DAILY NORMAL TEMPERATURE
1300	98.6	64	32	270	8	131.9	997.4	MAXIMUM 105 MINIMUM 81 MEAN 93
1400	100.0	62	29	225	5	134.0	996.7	
1500	100.2	64	31	225	9	132.9	996.1	PREVAILING WIND
1600	101.0	65	31	270	7	128.0	995.2	SW 6 MPH.
1700	100.5	65	32	225	7	119.7	994.4	DAILY PEAK WIND GUST
1800	100.4	65	32	225	8	115.0	993.7	WSW 18 MPH. 1512 MST.
1900	98.9	64	32	225	8	106.8	993.9	
2000	96.4	65	37	250	7	102.7	994.0	
2100	95.2	64	37	250	10	98.8	994.9	
2200	92.4	64	40	225	10	96.1	995.5	
2300	91.1	63	40	225	12	93.9	995.7	
2400	90.3	63	40	225	12	92.8	996.1	

Sunset: 1913 24 August 1959 Sunrise: 0608 25 August 1959

Forecast for 24 - 25 August 1959:

Scattered afternoon cumulus 7000 feet today and Tuesday. Southerly winds 5 - 15 MPH. 1700 - 2000 hours today and tomorrow. Little change in temperature.

High today 104 Low tonight 84 High tomorrow 105

Outlook for Wednesday:

Scattered cloudiness. Little change in temperature.

High 103 - 106 Low 82 - 85

SIGNAL CORPS TEST TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD IN DE. 1-2700 ELV. 324 FT.

DATE - 24 August 1959

TIME IST.	TEMP. OF	DEW POINT OF	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	89.7	62	40	200	12	91.4	996.2
0200	87.8	61	41		C	90.0	996.2
0300	87.2	62	43	315	2	88.7	996.2
0400	86.7	62	44	270	2	87.5	996.1
0500	84.9	63	47		C	86.4	996.1
0600	83.0	62	49	70	2	85.6	996.2
0700	84.2	63	48	160	5	86.9	996.9
0800	87.0	64	47	135	8	92.2	997.6
0900	91.1	63	40	180	9	101.0	997.7
1000	95.2	62	34	180	12	110.8	997.9
1100	98.0	57	25	180	7	112.0	998.1
1200	100.6	59	26	135	7	127.7	997.6
1300	102.5	60	25		C	132.8	996.9
1400	101.5	59	25	135	9	134.9	996.2
1500	103.8	58	22	225	7	132.0	995.7
1600	102.5	58	24	225	7	127.8	994.9
1700	102.9	58	26	225	14	121.4	993.9
1800	100.2	57	24	225	14	113.4	993.9
1900	97.9	59	28	270	13	104.0	994.2
2000	95.9	55	26	270	9	99.2	994.9
2100	94.6	55	25	200	7	97.0	995.4
2200	93.0	55	28	45	5	94.9	996.3
2300	92.1	54	28	160	3	92.3	996.7
2400	90.6	57	32	200	8	92.2	996.7

TEMPERATURE

MAXIMUM 105
MINIMUM 82
MEAN 94

RELATIVE HUMIDITY

MAXIMUM 49
MINIMUM 22
MEAN 36

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

39 Miles
24 HOUR
PRECIPITATION

None

PREVAILING
SKY COVER
(SUNRISE - SUNSET)

3 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 105
MINIMUM 81
MEAN 93

PREVAILING WIND

SW 7 MPH.

DAILY PEAK WIND GUST

WSW 23 MPH.
1540 MST.

Sunset: 1912 25 August 59 Sunrise: 0608 26 August 59

Forecast for 25 and 26 August 1959:

Scattered afternoon cumulus 7000 feet today and tomorrow. Southerly winds 5 - 15 MPH. 1000 - 2000 hours today and tomorrow. Little change in temperature.

High today 107 Low tonight 83 High tomorrow 107

Outlook for Thursday:

Scattered to broken cloudiness with increasing humidity. Little change in temperature.

High 103 - 106 Low 81 - 84

GENERAL USE - ST. YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 HLY. 324 FT.

DATE - 25 August 1959

TIME EST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	90.0	45	27	200	2	89.8	996.7
0200	87.8	45	23		0	88.1	996.7
0300	84.1	45	27	340	1	86.7	996.7
0400	83.6	48	25		0	83.2	996.7
0500	82.8	55	38	90	2	84.5	997.2
0600	82.3	55	39	70	3	84.7	997.9
0700	82.5	54	38		0	85.0	998.6
0800	84.8	56	37	135	6	89.3	998.8
0900	89.1	57	34	180	5	100.2	998.9
1000	92.7	60	34	135	6	109.4	998.9
1100	95.4	52	23	180	3	119.2	998.6
1200	98.0	52	21	180	5	127.0	998.6
1300	99.7	54	22	290	12	134.3	997.9
1400	101.0	57	24	315	8	136.2	996.9
1500	102.3	56	21	290	9	135.1	996.1
1600	101.8	57	23	270	9	130.8	995.4
1700	102.0	56	22	290	4	125.0	994.0
1800	100.9	58	24	270	12	115.2	993.7
1900	98.3	58	27	225	12	105.3	993.7
2000	95.4	54	25	250	9	100.1	993.9
2100	93.1	56	29	250	9	97.0	994.2
2200	92.1	50	24	225	12	94.8	994.7
2300	88.1	56	34		0	92.0	995.5
2400	88.2	58	37	225	7	90.4	995.5

TEMPERATURE

MAXIMUM 104
MINIMUM 80
MEAN 92

RELATIVE HUMIDITY

MAXIMUM 39
MINIMUM 21
MEAN 30

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

40 Miles
24 HOUR
PRECIPITATION

None
PREVAILING
SKY COVER
(SUNRISE - SUNSET)

0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 105
MINIMUM 81
MEAN 93

PREVAILING WIND

SW 6 MPH.
DAILY PEAK WIND GUST

WNW 14 MPH.
1254 MST.

Sunset: 1911 26 August 1959 Sunrise: 0609 27 August 1959
Forecast for 26 - 27 August 1959:
Clear today through Thursday with southwesterly winds 5 - 12 MPH.
1000 - 2000 hours. Little temperature change.

High today 105 Low tonight 80 High tomorrow 106

Outlook for Friday:
Scattered cloudiness. Little temperature change.

High 105 - 108 Low 79 - 82

SIGNAL CO. 1ST TEST YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 SLV. 324 FT.

DATE - 26 August 1959

TIME LST.	TEMP. OF	DEW POINT OF	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	84.0	59	43	290	2	88.6	995.7
0200	82.4	60	45	290	2	87.1	995.7
0300	82.5	59	45		0	85.8	995.5
0400	82.0	59	46		0	84.6	995.5
0500	80.5	58	46	45	2	83.2	994.9
0600	79.7	57	45	90	2	82.1	994.9
0700	81.0	57	45	90	2	82.2	995.2
0800	84.9	59	42	160	5	89.8	995.5
0900	88.9	57	34	135	7	99.0	995.5
1000	92.2	53	26	225	6	109.3	995.5
1100	95.1	56	27	200	2	119.1	996.2
1200	99.8	56	24	180	9	128.4	996.1
1300	99.9	60	27	225	5	133.2	995.4
1400	101.8	60	25	225	7	135.1	994.7
1500	102.7	64	29	270	12	132.9	993.9
1600	103.3	60	25	180	8	129.8	992.8
1700	102.0	52	28	225	2	123.0	992.0
1800	102.0	62	27	290	10	115.0	991.8
1900	100.0	62	29	270	8	107.0	991.8
2000	97.0	67	31	250	12	102.0	992.0
2100	95.0	54	26	250	8	97.0	992.7
2200	89.9	57	34	270	6	94.0	993.2
2300	90.0	53	29	250	2	91.5	993.5
2400	86.0	56	36	315	3	89.0	993.5

TEMPERATURE

MAXIMUM 105
MINIMUM 79
MEAN 92

RELATIVE HUMIDITY

MAXIMUM 46
MINIMUM 24
MEAN 35

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

39 Miles

24 HOUR
PRECIPITATION

None

PREVAILING
SKY COVER
(SUNRISE - SUNSET)

0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 105
MINIMUM 80
MEAN 93

PREVAILING WIND

W 5 MPH.

DAILY PEAK WIND GUST

W 18 MPH.
1500 MST.

Sunset: 1910 27 August 59 Sunrise: 0610 28 August 59

Forecast for 27 and 28 August 1959:

Generally clear with little temperature change. Winds southwesterly
5 - 12 MPH.

High today 105 Low tonight 79 High tomorrow 104

Outlook for Saturday:

Scattered cloudiness with little temperature change.

High 103 - 106 Low 77 - 80

YUMA TEST STATION DATA, ARIZONA
WEATHER DATA FOR THE MONTH OF AUGUST 1959
ELEV. 324 FT.

DATE - 27 August 1959

TIME LST.	TEMP. °F	DEW POINT °F	REL. HUMIDITY (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (NBS)
0100	84.2	55	37	315	2	86.9	993.5
0200	83.9	55	38	315	2	85.2	993.5
0300	82.0	57	42		0	85.2	993.5
0400	80.9	53	39	90	2	83.9	993.5
0500	79.9	50	35	45	3	82.0	993.5
0600	80.2	52	37	90	3	81.1	993.7
0700	79.1	54	42		0	83.7	994.5
0800	83.9	55	37	90	2	87.8	994.5
0900	89.0	54	31	160	4	91.5	995.2
1000	93.4	55	27	180	5	110.0	995.4
1100	97.8	51	21	200	6	119.1	995.4
1200	100.0	53	21	135	5	128.3	995.2
1300	102.3	54	20	135	7	131.8	994.5
1400	103.9	55	20	180	7	135.6	993.9
1500	103.2	57	22	200	14	133.4	993.3
1600	104.4	59	23	225	12	127.8	992.7
1700	102.8	60	25	225	9	122.9	992.2
1800	102.3	55	21	225	14	113.9	992.2
1900	100.5	51	19	200	12	105.0	992.0
2000	98.2	50	20	200	12	100.4	992.3
2100	96.3	53	24	200	13	97.9	993.2
2200	94.8	54	26	225	5	95.8	993.7
2300	92.7	54	27	340	5	93.8	994.2
2400	89.8	54	30	270	5	91.9	994.5

TEMPERATURE

MAXIMUM 106
MINIMUM 77
MEAN 92

RELATIVE HUMIDITY

MAXIMUM 42
MINIMUM 19
MEAN 31

PREVAILING
VISIBILITY

(SUNRISE - SUNSET)
40 Miles

24 HOUR
PRECIPITATION

None

PREVAILING
SKY COVER

(SUNRISE - SUNSET)
0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 105
MINIMUM 80
MEAN 93

PREVAILING WIND

SJW 6 MPH.

DAILY PEAK WIND GUST

SW 24 MPH.
1340 MST.

Sunset: 1908 28 August 59 Sunrise: 0610 29 August 59
Forecast for 28 and 29 August 1959:
Clear with little temperature change. Winds southwesterly 5 - 12 MPH.

High today 106 Low tonight 79 High tomorrow 105

Outlook for Sunday:
Generally clear with little temperature change.

High 103 - 106 Low 77 - 80

SIGNAL CORP MET TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 ELEV. 324 FT.

DATE 28 August 1959

TIME MST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	87.8	57	35	270	5	90.1	994.7
0200	87.9	59	37	270	7	89.2	994.9
0300	86.9	56	35	135	2	87.8	995.0
0400	83.9	60	44		C	86.1	995.2
0500	82.8	56	40		C	84.7	995.5
0600	82.3	55	39		C	81.4	995.5
0700	81.6	55	40	90	1	83.2	996.2
0800	85.2	52	32	135	7	90.2	997.1
0900	88.7	71	56	160	7	99.2	997.1
1000	92.1	66	42	135	5	110.0	997.7
1100	96.0	62	33	180	2	120.0	997.9
1200	98.5	66	35	270	9	128.8	997.6
1300	100.6	67	33	225	9	133.6	996.9
1400	102.8	64	29	225	9	133.8	996.6
1500	103.2	65	29	225	9	132.2	995.9
1600	103.8	64	28	225	13	128.2	995.5
1700	103.2	64	29	225	10	122.1	995.2
1800	102.2	64	29	200	12	114.4	995.2
1900	100.4	61	28	200	10	105.9	995.2
2000	98.8	61	29	200	8	101.8	995.7
2100	94.1	64	37	270	7	98.2	996.7
2200	92.5	66	42	200	10	96.0	997.4
2300	92.1	61	35	180	6	94.7	997.9
2400	89.9	64	42	270	5	92.8	998.3

TEMPERATURE

MAXIMUM 104
MINIMUM 82
MEAN 93

RELATIVE HUMIDITY

MAXIMUM 56
MINIMUM 28
MEAN 42

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)
40 Miles

24 HOUR
PRECIPITATION
None

PREVAILING
SKY COVER
(SUNRISE - SUNSET)
0- Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 105
MINIMUM 80
MEAN 93

PREVAILING WIND
WSW - 8 MPH

DAILY PEAK WIND GUST
SW - 20 MPH

1459 MST

SUNSET 29 AUGUST 1959; 1907 SUNRISE 30 AUGUST 1959: 0611

SMALL CAMP MET STATION YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD HIND. T-2700 ELV. 324 FT.

29 AUGUST 1959
DATE -

TIME LST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	88.1	69	54	180	7	91.1	998.8
0200	87.5	71	56	225	6	90.1	998.6
0300	87.1	69	55		0	89.2	998.8
0400	86.8	68	54	45	5	88.0	998.9
0500	85.1	67	54	20	5	87.4	998.8
0600	84.1	70	62	160	5	86.9	999.4
0700	85.2	73	67	160	7	87.8	1000.1
0800	86.7	72	61	315	3	93.8	1000.6
0900	88.6	71	56	340	1	104.1	1000.6
1000	93.1	72	51		0	115.3	1000.1
1100	95.9	70	43	180	7	123.4	1000.8
1200	99.7	69	38	225	7	131.3	1000.4
1300	100.9	69	36		0	132.2	999.8
1400	102.5	70	36	270	6	138.9	998.9
1500	104.4	71	34	250	2	136.6	998.3
1600	102.5	70	35	270	6	132.5	997.6
1700	103.2	68	33	270	5	126.2	997.4
1800	101.9	71	37	270	13	116.9	997.1
1900	99.2	71	41	270	9	108.6	997.1
2000	97.0	69	40	270	9	103.8	997.1
2100	95.2	69	42	270	6	100.6	997.7
2200	94.4	64	36	250	5	98.0	998.3
2300	90.2	67	47	290	5	96.1	998.3
2400	90.1	63	41	290	7	93.9	998.3

TEMPERATURE
104
MAXIMUM 84
MINIMUM 96
MEAN

RELATIVE HUMIDITY
67
MAXIMUM 33
MINIMUM 50
MEAN

PREVAILING
VISIBILITY
(SUNRISE SUNSET)
37 MILES

24 HOUR
PRECIPITATION
none

PREVAILING
SKY COVER
(SUNRISE SUNSET)
0- Clear

YUMA USWB DAILY
NORMAL TEMPERATURE
105
MAXIMUM 80
MINIMUM 93
MEAN

PREVAILING WIND
W - 5, MPH

DAILY PEAK WIND GUST
W - 18 MPH
1600 MST

SUNSET 30 AUGUST 1959 ; 1908 SUNRISE 31 AUGUST 1959 0612

YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA JOURNAL NO. 1-1000 REV. 324 FT.

DATE - 30 AUGUST 1959

TIME LST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	88.2	64	45	270	3	92.0	998.2
0200	87.0	65	48		0	91.0	998.1
0300	85.8	64	48	360	1	89.5	997.9
0400	86.5	64	48		0	88.5	997.9
0500	86.5	64	46		0	87.8	998.3
0600	84.0	62	48		0	86.5	998.4
0700	84.8	62	47		0	86.0	998.8
0800	88.2	63	43		0	93.0	999.3
0900	92.8	62	36	270	9	103.8	999.8
1000	95.5	61	32	250	10	112.9	999.8
1100	99.2	61	29	225	7	122.1	1000.1
1200	102.3	62	27	200	6	130.4	999.6
1300	105.4	61	24	270	6	136.2	999.1
1400	106.3	55	19	250	9	138.6	998.4
1500	107.4	55	18	270	7	137.5	997.6
1600	108.3	56	18	250	7	133.2	996.7
1700	106.9	58	20	225	7	127.2	995.7
1800	106.3	56	19	225	7	111.7	995.7
1900	104.5	54	19	225	8	108.5	995.5
2000	101.2	57	23	270	5	103.6	995.5
2100	98.2	63	31	250	9	100.9	996.1
2200	95.9	65	36	225	12	98.5	996.6
2300	94.7	63	35	250	9	96.6	997.1
2400	90.4	65	43	315	3	94.5	997.1

TEMPERATURE

MAXIMUM 108
MINIMUM 84
MEAN 96

RELATIVE HUMIDITY

MAXIMUM 48
MINIMUM 18
MEAN 33

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

40 - MILES
24 HOUR
PRECIPITATION

NONE

PREVAILING
SKY COVER
(SUNRISE - SUNSET)

0 - CLEAR

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 80
MEAN 92

PREVAILING WIND
WSW - 5 MPH

DAILY PEAK WIND GUST
W - 15 MPH
1415 MST

SUNSET 31 AUGUST 1959 ; 1905

SUNRISE 1 SEPTEMBER 1959 ; 0612

FORECAST FOR 31 AUGUST & 1 SEPTEMBER 1959

CLEAR WITH SLIGHTLY WARMER TEMPERATURES. WINDS SOUTHERLY 5 -12 MPH.

HIGH TODAY - 114 LOW TONIGHT - 84 HIGH TOMORROW -112

LOW TOMORROW NIGHT - 82

OUT LOOK FOR WEDNESDAY

CLEAR AND CONTINUED HOT

HIGH -111-114

LOW -80-83

YUMA TEST STATION YUMA, ARIZONA
WEATHER BAL. STATION BLDG. 7-2700 ELEV. 324 FT.

DATE - 31 August 1959

TIME ST.	TEMP. °F	DEW POINT °F	REL. HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	89.0	64	44		C	92.0	997.0
0200	88.0	64	44	315	3	90.8	996.6
0300	87.8	63	43	315	5	89.5	996.6
0400	86.0	62	45		C	88.5	996.6
0500	85.0	61	44		C	87.0	996.2
0600	83.2	62	45		C	86.0	996.4
0700	83.5	62	45		C	86.0	996.9
0800	87.0	63	45		C	92.0	997.4
0900	91.9	65	42		C	104.8	997.4
1000	98.0	61	30	225	7	114.7	997.6
1100	100.5	56	25	180	7	122.1	996.6
1200	103.3	56	21	270	6	130.2	995.9
1300	105.9	60	23	225	6	136.2	995.0
1400	108.4	56	18	250	15	136.8	994.4
1500	108.2	57	19	250	14	124.1	993.7
1600	109.5	58	19	250	9	129.8	992.5
1700	109.1	53	16	250	14	124.6	992.2
1800	106.9	57	20	270	8	112.1	991.8
1900	105.1	61	24	250	13	108.3	991.5
2000	102.2	63	20	225	12	105.0	991.8
2100	95.9	66	38	270	8	100.4	992.8
2200	93.0	66	42	270	7	96.2	993.5
2300	91.7	65	42	270	7	95.1	993.5
2400	90.7	66	44	270	5	92.4	993.7

TEMPERATURE

MAXIMUM 110
MINIMUM 82
MEAN 96

RELATIVE HUMIDITY

MAXIMUM 66
MINIMUM 53
MEAN 60

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

35 MILES
24 HOUR
PRECIPITATION

NONE

PREVAILING
SKY COVER
(SUNRISE - SUNSET)

0 - CLEAR

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 80
MEAN 92

PREVAILING WIND

W - 6 MPH

DAILY PEAK WIND GUST

WSW - 21 MPH
1414 MST

SUNSET: 1 SEPTEMBER 1959; 1903

SUNRISE: 2 SEPTEMBER 1959; 0613

FORECAST FOR 1-2 SEPTEMBER 1959

CLEAR AND CONTINUED HOT. WEST SOUTHWESTERLY WINDS 5-10 MPH FORENOON
HOURS INCREASING TO 10-15 MPH AFTERNOON HOURS TODAY AND WEDNESDAY.
HIGH TODAY 111 LOW TONIGHT 80 HIGH TOMORROW 111
LOW TOMORROW NIGHT 81

outlook FOR THURSDAY:

CLEAR TO SCATTERED CLOUDINESS. CONTINUED HOT.
LOW 80-83 HIGH 107-110

SIGNAL CORP AT TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD HHDG. T-2700 ELEV. 324 FT.

DATE 2 SEPTEMBER 1959

TIME ST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	90.0	65	44	270	5	91.5	993.7
0200	89.0	67	48	270	2	90.5	993.7
0300	90.0	65	44	180	4	89.0	993.7
0400	87.0	65	48		0	87.0	993.0
0500	85.0	64	50	315	4	86.0	994.2
0600	80.5	63	56	45	2	83.0	994.7
0700	81.5	63	53	45	2	83.0	995.2
0800	86.0	63	47		0	89.0	995.5
0900	92.8	66	41		0	101.9	996.7
1000	96.6	63	33		0	113.8	996.7
1100	100.6	53	21	315	5	124.2	995.9
1200	102.0	45	15	280	9	129.6	995.5
1300	103.4	55	21	250	13	133.9	995.2
1400	105.9	53	18	270	10	136.2	994.9
1500	107.2	52	16	270	7	135.2	993.3
1600	106.7	49	15	290	9	128.9	992.8
1700	106.6	49	15	270	7	123.0	992.3
1800	104.4	43	13	290	7	113.2	992.5
1900	102.4	42	13	250	5	103.8	992.2
2000	99.1	56	24	200	16	99.3	992.3
2100	97.4	63	32	200	12	97.8	993.3
2200	94.2	64	37	340	9	94.9	993.9
2300	92.3	63	38	290	5	93.0	994.4
2400	87.9	66	49	200	5	90.3	994.2

TEMPERATURE

MAXIMUM 109
MINIMUM 79
MEAN 94

RELATIVE HUMIDITY

MAXIMUM 56
MINIMUM 13
MEAN 35

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

38 MILES

24 HOUR
PRECIPITATION
NONE

PREVAILING
SKY COVER
(SUNRISE - SUNSET)
0 - CLEAR

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 79
MEAN 92

PREVAILING WIND
W - 6 MPH

DAILY PEAK WIND GUST
SSW - 18 MPH

1959 MST

SUNSET: 2 SEPTEMBER 1959 1902 SUNRISE: 3 SEPTEMBER 1959, 0614

FORECAST FOR 2&3 SEPTEMBER 1959

CLEAR WITH LITTLE TEMPERATURE CHANGE. WINDS SOUTHERLY 4-12 MPH.

HIGH TODAY * 110 LOW TONIGHT - 79 HIGH TOMORROW - 109

LOW TOMORROW NIGHT -78

OUTLOOK FOR FRIDAY:

CLEAR WITH LITTLE TEMPERATURE CHANGE.

HIGH 107-110

LOW 77-80

SECIAL ONE 11 TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
METEOR DATA REDDING BLDG. 1-2700 ELV. 324 FT.

DATE - 2 Sept 1959

TIME EST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	86.4	65	49	315	3	86.7	994.9
0200	85.9	63	47	350	2	87.0	994.9
0300	83.8	62	48		0	85.8	995.0
0400	82.2	62	50		0	84.0	995.0
0500	81.1	60	43	45	2	82.3	995.0
0600	80.1	58	47		0	81.3	995.0
0700	79.2	60	53	90	2	81.0	995.9
0800	83.6	62	48	135	5	89.3	996.9
0900	88.9	64	45	180	5	101.9	996.9
1000	94.3	63	36		0	114.1	997.1
1100	95.8	64	35		0	119.1	996.6
1200	101.3	57	24	200	8	132.6	996.6
1300	104.4	52	17	225	12	136.4	995.7
1400	106.1	64	26	200	14	136.1	995.2
1500	105.8	54	18	225	12	133.2	994.9
1600	105.7	52	17	180	12	127.8	994.4
1700	105.0	59	22	225	9	122.8	993.5
1800	103.9	56	21	200	12	113.0	993.3
1900	102.0	53	20	225	9	105.2	993.3
2000	98.4	49	19	180	2	99.3	993.5
2100	96.7	48	19	180	7	96.0	994.2
2200	93.2	46	20	200	5	93.2	994.2
2300	91.1	50	25	270	5	90.8	994.9
2400	85.1	57	38	290	5	88.3	995.2

TEMPERATURE

MAXIMUM 108
MINIMUM 78
MEAN 93

RELATIVE HUMIDITY

MAXIMUM 53
MINIMUM 17
MEAN 35

PREVAILING
VISIBILITY

(SUNRISE - SUNSET)

38 Miles

24 HOUR
PRECIPITATION

None

PREVAILING
SKY COVER

(SUNRISE - SUNSET)

0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 79
MEAN 92

PREVAILING WIND

SSW 6 MPH

DAILY PEAK WIND GUST

SSW 18 MPH.
1359 MST.

Sunset: 1901 3 Sept 59 Sunrise: 0614 4 Sept 59

Forecast for 3 - 4 Sept 1959:

Clear with little temperature change today through Friday.

Southwesterly winds 5 - 15 MPH. 1000 - 2000 today and Friday.

High today 108 Low tonight 75 High tomorrow 108

Outlook for Saturday:

Clear with little change in temperature.

High 105 - 108 Low 74 - 76

5.30

STATION CONF. AT TOWN TAMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 ELEV. 324 FT.

DATE - 3 Sept 1959

TIME MST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	84.8	56	37	270	3	86.1	995.4
0200	83.8	55	37		0	84.8	995.4
0300	82.2	48	31		0	82.5	995.4
0400	80.0	47	32		0	81.3	995.5
0500	78.4	47	33	45	2	79.8	996.1
0600	77.0	48	35	90	3	78.5	996.2
0700	76.2	53	44	90	2	78.0	996.7
0800	80.0	54	41		0	87.0	997.1
0900	84.2	55	37	180	5	98.8	997.4
1000	90.0	55	31		0	109.4	997.6
1100	96.0	53	24	225	5	123.0	997.2
1200	98.0	51	21		0	131.6	996.9
1300	101.1	47	16	270	5	133.8	996.4
1400	103.2	36	10	270	9	134.4	995.9
1500	104.2	44	13	270	9	132.4	994.9
1600	104.8	44	13	270	9	127.3	994.4
1700	104.9	38	10	225	2	121.0	993.2
1800	103.3	38	11	270	2	111.3	992.8
1900	99.3	44	15		0	101.7	992.2
2000	94.9	38	14		0	95.4	992.2
2100	93.9	42	17		0	91.8	993.2
2200	93.0	51	24	225	12	90.8	993.5
2300	87.1	56	35	340	1	88.7	993.9
2400	85.0	58	41	340	2	86.7	994.2

TEMPERATURE

MAXIMUM 107
MINIMUM 78
MEAN 93

RELATIVE HUMIDITY

MAXIMUM 44
MINIMUM 10
MEAN 27

PREVAILING

VISIBILITY

(SUNRISE - SUNSET)

39 Miles
24 HOUR
PRECIPITATION

None

PREVAILING

SKY COVER

(SUNRISE - SUNSET)

0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 79
MEAN 92

PREVAILING WIND

W 3 MPH.

DAILY PEAK WIND GUST

W 17 MPH.
1458 MST.

Sunset: 1859 4 Sept 59 Sunrise: 0615 5 Sept 59

Forecast for 4 - 5 Sept 1959:

Clear today through Saturday. Little change in temperature.

Southwesterly winds 5 - 15 MPH. 1000 - 1900 hours today through Saturday.

High today 108 Low tonight 75 High tomorrow 108

Outlook for Sunday:

Clear with little change in temperature.

High 105 - 108 Low 74 - 77

0-31

SIGNAL CORP MET TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. 1-2700 ELV. 326 FT.

DATE - 4 Sept 1959

TIME EST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	83.6	56	38	315	2	84.8	994.2
0200	81.0	55	41		0	82.5	994.2
0300	78.9	53	41	90	2	80.9	994.0
0400	77.8	48	35	90	2	79.1	994.0
0500	76.3	47	36	90	2	78.0	993.9
0600	76.8	45	33		0	77.0	993.9
0700	76.3	43	30		0	76.8	994.4
0800	79.9	45	29	135	5	85.5	995.0
0900	86.3	47	26	180	3	97.3	995.4
1000	91.9	47	21		0	110.2	995.7
1100	95.1	47	19	135	7	121.3	996.9
1200	100.2	40	13	135	8	127.8	996.7
1300	103.2	45	14	180	5	133.4	996.2
1400	107.1	37	9	225	14	133.9	995.5
1500	108.6	39	9	200	14	131.8	995.4
1600	107.9	46	13	225	16	125.9	994.2
1700	107.0	50	15	225	14	120.6	992.8
1800	105.6	51	17	180	12	112.7	992.7
1900	102.3	50	17	180	5	103.8	992.7
2000	99.9	50	19	180	2	99.0	992.7
2100	93.0	62	36	290	2	94.8	993.5
2200	88.9	60	38	290	2	90.7	994.0
2300	89.9	54	30	270	2	88.8	994.5
2400	83.7	89	43	315	2	85.9	994.9

TEMPERATURE

MAXIMUM 110
MINIMUM 75
MEAN 93

RELATIVE HUMIDITY

MAXIMUM 43
MINIMUM 9
MEAN 26

PREVAILING

VISIBILITY
(SUNRISE - SUNSET)
39 Miles

24 HOUR
PRECIPITATION
None

PREVAILING
SKY COVER
(SUNRISE - SUNSET)
0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 79
MEAN 92

PREVAILING WIND
8 5 MPH.

DAILY PEAK WIND GUST
SW 23 MPH.
1415 MST.

Sunset: 1858 5 Sept 59 Sunrise: 0616 6 Sept 59

STANDARD FORM 1057 FORM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 ELEV. 324 FT.

DATE - 5 Sept 1959

TIME LST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	82.1	62	50	315	2	84.9	995.0
0200	81.9	60	48	360	2	82.2	995.0
0300	80.4	57	44	45	2	81.2	995.0
0400	78.8	51	38	90	1	80.0	995.0
0500	75.8	46	34	110	2	75.4	994.9
0600	75.9	47	37	70	2	75.8	995.2
0700	76.2	52	42		0	77.3	995.9
0800	82.2	55	40	90	2	87.1	996.2
0900	86.4	61	42		0	98.8	996.4
1000	90.5	60	36	135	4	108.9	996.7
1100	95.8	64	35	160	4	121.3	997.2
1200	99.0	68	37		0	129.7	996.9
1300	102.7	68	33	225	12	133.8	996.2
1400	104.6	66	29	180	14	135.2	995.5
1500	106.8	64	25	225	9	133.3	994.9
1600	107.0	60	22	225	6	129.4	993.9
1700	107.8	62	23	225	6	124.0	992.8
1800	106.0	60	23	225	6	114.0	992.8
1900	100.0	67	35	270	8	105.0	992.8
2000	96.0	66	37	270	7	100.0	993.0
2100	93.5	61	33	270	9	96.0	993.7
2200	93.2	58	30	270	7	93.0	994.2
2300	91.0	59	34	270	3	91.0	994.9
2400	90.0	53	29	200	5	89.0	994.9

TEMPERATURE

MAXIMUM 108
MINIMUM 73
MEAN 91

RELATIVE HUMIDITY

MAXIMUM 50
MINIMUM 22
MEAN 36

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

35 Miles

24 HOUR
PRECIPITATION

None

PREVAILING
SKY COVER
(SUNRISE - SUNSET)

0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 79
MEAN 92

PREVAILING WIND

S 5 MPH.

DAILY PEAK WIND GUST

SW 22 MPH.
1430 NST.

Sunset: 1857 6 Sept 59

Sunrise: 0616 7 Sept 59

SIGNAL CORP 1017 TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD BLDG. T-2700 ELV. 324 FT.

DATE - 6 Sept 1959

TIME ST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	85.2	58	40	270	2	87.8	995.2
0200	82.8	57	42	20	1	85.8	995.0
0300	82.0	57	42		0	84.3	995.2
0400	78.1	52	41		0	80.2	995.0
0500	78.0	49	35	70	3	80.2	994.5
0600	77.0	51	40		0	78.8	994.5
0700	81.7	54	40	90	2	83.6	994.7
0800	83.3	54	38	90	3	89.9	995.5
0900	86.2	58	38	135	7	95.7	995.6
1000	91.9	58	32	180	3	108.3	995.9
1100	96.3	55	25	160	2	119.8	996.2
1200	101.7	52	19		0	129.0	995.9
1300	104.6	53	18	160	2	135.2	995.0
1400	105.2	51	17	180	5	137.1	994.2
1500	106.4	52	16	225	7	135.3	993.5
1600	103.0	56	19	180	7	130.0	992.8
1700	107.0	47	14	270	7	122.0	992.1
1800	105.0	54	19	270	7	112.5	992.0
1900	100.5	47	17	270	2	112.0	992.0
2000	96.8	50	21		0	107.8	992.0
2100	95.2	46	19	225	5	94.5	992.3
2200	96.0	56	26	225	7	93.0	992.8
2300	93.0	51	24	315	4	91.0	993.2
2400	87.8	55	33	315	4	88.0	993.3

TEMPERATURE

MAXIMUM 109
MINIMUM 76
MEAN 93

RELATIVE HUMIDITY

MAXIMUM 42
MINIMUM 14
MEAN 28

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

40 Miles
24 HOUR
PRECIPITATION

None

PREVAILING
SKY COVER
(SUNRISE - SUNSET)

0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 78
MEAN 91

PREVAILING WIND

W 3 MPH.

DAILY PEAK WIND GUST

SW 15 MPH.
1455 MST.

Sunset: 1855 7 Sept 59

Sunrise: 0617 8 Sept 59

SIGNAL CORP. / TEAM YUMA
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD HDG. T-2700 ELV. 324 FT.

DATE - 7 Sept 1959

TIME ST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	85.9	54	34	290	6	86.5	993.3
0200	85.6	53	33	340	2	83.9	993.3
0300	82.9	57	41		0	82.3	993.3
0400	80.3	51	36		0	81.0	993.2
0500	77.8	48	35		0	79.8	992.7
0600	77.2	48	36	70	2	78.3	992.7
0700	78.0	50	37	20	3	77.8	993.2
0800	82.0	52	35		0	87.5	994.0
0900	82.2	54	38	160	1	98.2	994.0
1000	91.4	50	25	160	1	110.7	994.0
1100	96.8	46	18	135	5	119.6	994.9
1200	100.6	44	15	200	1	129.8	994.9
1300	103.8	41	12	180	7	133.7	994.2
1400	106.4	40	11	225	9	134.5	993.3
1500	107.3	47	13	200	5	133.7	992.7
1600	107.1	44	12	225	8	138.4	991.7
1700	106.0	51	16	225	5	121.0	994.4
1800	105.0	46	16	270	7	112.0	994.4
1900	101.5	43	14	225	7	103.0	990.8
2000	98.5	52	21	225	9	100.0	994.4
2100	96.0	54	24	200	12	97.0	991.3
2200	97.0	52	25	200	10	94.0	991.6
2300	93.8	45	19		0	92.0	992.5
2400	88.0	59	38	315	6	90.0	992.8

TEMPERATURE

MAXIMUM 109
MINIMUM 76
MEAN 93

RELATIVE HUMIDITY

MAXIMUM 41
MINIMUM 11
MEAN 26

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)

40 Miles

24 HOUR
PRECIPITATION

None

PREVAILING
SKY COVER
(SUNRISE - SUNSET)

0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 104
MINIMUM 78
MEAN 91

PREVAILING WIND

SW 4 MPH.

DAILY PEAK WIND GUST

SSW 18 MPH.
2020 MST.

Sunset: 1854 8 Sept 59 Sunrise: 0617 9 Sept 59

Forecast for 8 and 9 Sept 1959:

Clear today through Wednesday. Little change in temperature and humidity. Surface winds 1000 to 1800 hrs today, mostly Southerly 5 - 10 MPH.

High today 107 Low tonight 75 High tomorrow 107

Outlook for Thursday:
Clear and continued hot.

High 106 - 107 Low 73 - 75

C-35

STATION: YUMA, ARIZ. 324 FT.
 DATE: 8 Sept 1959

TIME EST.	TEMP. °F	DEW POINT °F	REL. HUMIDITY (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (HGS)
0100	74.3	53	49	270	5	86.7	992.8
0200	72.3	52	50		0	84.7	992.8
0300	61.8	59	46		0	82.8	992.8
0400	79.3	58	49		0	81.1	993.0
0500	78.0	56	46		0	79.9	993.2
0600	76.9	53	44	90	2	79.0	993.7
0700	75.0	54	41		0	79.0	994.5
0800	81.0	55	41	160	5	88.8	994.9
0900	86.2	59	40	180	2	98.8	995.0
1000	91.5	65	42	180	5	110.9	995.2
1100	94.6	65	39		0	120.1	995.7
1200	96.8	67	37	90	5	128.1	995.7
1300	100.7	67	34	160	12	134.3	995.4
1400	101.5	67	33	200	15	132.9	994.9
1500	103.1	64	28	225	12	130.7	994.5
1600	102.6	62	27	200	9	127.0	994.0
1700	102.5	60	25	160	7	120.9	993.2
1800	101.4	61	27	180	9	111.0	993.2
1900	98.4	60	29	225	9	102.3	993.2
2000	96.1	58	28	225	7	97.9	993.9
2100	93.4	56	31	225	5	95.0	994.5
2200	90.2	67	47	200	13	92.4	995.4
2300	88.2	68	51	200	12	90.1	995.9
2400	87.8	61	41	225	5	87.8	996.2

TEMPERATURE

MAXIMUM 103
 MINIMUM 75
 MEAN 89

RELATIVE HUMIDITY

MAXIMUM 51
 MINIMUM 25
 MEAN 36

PREVAILING

VISIBILITY
 (SUNRISE - SUNSET)
 39 Miles

24 HOUR
 PRECIPITATION
 None

PREVAILING

SKY COVER
 (SUNRISE - SUNSET)
 0 - Clear

YUMA USWB DAILY
 NORMAL TEMPERATURE

MAXIMUM 103
 MINIMUM 78
 MEAN 91

PREVAILING WIND

SW 6 MPH.

DAILY PEAK WIND-GUST
 SSW 19 MPH.
 1404 MST.

Sunset: 1853 9 Sept 59 Sunrise: 0618 10 Sept 59
 Forecast for 9 and 10 Sept 1959:

Clear today and Thursday. Little change in temperature and humidity. Surface winds 1000 - 1800 hours today, Southerly 5 - 10 MPH.

High today 104 Low tonight 75 High tomorrow 103

Outlook for Friday:

Scattered cloudiness. Little change in temperature and humidity.

High 102 - 104 Low 74 - 75

SPECIAL CLIMAT. UNIT YEAR 1959
YUMA TEST STATION YUMA, ARIZONA
WEATHER DATA RECORD HEAD. 7-2750 REV. 324 PT.

DATE - 9 Sept 1959

TIME LST.	TEMP. °F	DEW POINT °F	REL HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (MBS)
0100	85.1	63	48	290	1	86.3	996.9
0200	82.0	63	53	45	2	84.8	996.9
0300	79.8	65	62		0	82.6	996.9
0400	79.0	63	58	290	5	81.1	997.6
0500	78.0	63	60	110	2	80.0	997.9
0600	77.3	62	58	110	2	78.9	998.6
0700	78.7	67	68		0	79.9	999.6
0800	82.7	70	65		0	73.5	1000.1
0900	86.6	71	59	135	2	101.8	1000.5
1000	88.3	70	55	135	1	111.7	1000.5
1100	93.5	68	43		0	122.3	1000.5
1200	96.0	63	32	225	5	130.9	1000.3
1300	101.3	59	25	110	5	134.7	999.4
1400	101.9	64	30	315	7	135.2	998.9
1500	102.5	63	28	250	9	133.2	998.1
1600	103.4	60	24	270	6	128.7	997.6
1700	105.0	52	17	315	7	122.0	996.6
1800	104.2	55	20	270	5	112.9	996.4
1900	100.8	55	22	270	8	104.1	996.2
2000	98.0	60	28	270	5	100.0	996.4
2100	96.0	58	28	270	5	96.8	996.9
2200	94.2	57	29	270	5	94.0	997.2
2300	92.0	59	33	225	2	91.9	997.9
2400	89.8	59	36		0	90.2	998.4

TEMPERATURE

MAXIMUM 105
MINIMUM 76
MEAN 91

RELATIVE HUMIDITY

MAXIMUM 68
MINIMUM 17
MEAN 43

PREVAILING
VISIBILITY
(SUNRISE - SUNSET)
36 Miles

24 HOUR
PRECIPITATION
None

PREVAILING
SKY COVER
(SUNRISE - SUNSET)
0 - Clear

YUMA USWB DAILY
NORMAL TEMPERATURE

MAXIMUM 103
MINIMUM 77
MEAN 90

PREVAILING WIND
W 3 MPH.

DAILY PEAK WIND-GUST
NW 12 MPH.
1345 MST.

Sunset: 1851 10 Sept 59 Sunrise: 0619 11 Sept 59
Forecast for 10 and 11 September 1959:

SPECIAL THUNDERSTORM AND WIND ADVISORY!

Variable cloudiness today through Friday with scattered layers
6 - 8,000 feet and broken layers 12 - 14,000 feet. Thunderstorms
mostly over mountains this afternoon through Friday with gusty
strong winds in vicinity of thunderstorms. Surface winds 1600 - 1800
hours today, East to Southeast 5 - 15 MPH. with gusts 20 to 30 MPH.
Slightly lower temperatures today and continued humid.

High today 102 Low tonight 77 High tomorrow 102

Outlook for Saturday:

Decreasing cloudiness but continued warm and humid.

High 102 - 104 Low 75 - 77

SIGNAL CORP. WET TEST TANK
 1001 1ST STATION FLD, ARIZONA
 WEATHER DATA RECORD 1100. 7-2700 HLT. 12A FT.

DATE - 10 Sept 1959

TIME EST.	TEMP. °F	DEW POINT °F	REL. HUMID (%)	WIND DIR. DEG.	WIND SPEED MPH.	SOIL TEMP. °F	STATION PRESSURE (HRS)
0100	80.0	70	52	180	16	91.2	999.1
0200	80.0	68	52	180	23	90.0	1000.3
0300	85.3	69	59	180	16	88.3	1000.8
0400	84.8	70	62	180	12	86.3	1001.0
0500	83.3	71	66	225	2	85.1	1000.8
0600	83.9	70	63	270	5	85.3	1001.0
0700	85.0	66	54	90	10	85.9	1002.1
0800	86.3	66	52	90	10	90.6	1002.7
0900	82.8	68	62	135	3	97.2	1003.2
1000	87.9	65	48	160	8	97.4	1003.3
1100	92.7	63	37	110	12	105.0	1003.5
1200	94.0	60	32	135	10	103.0	1003.7
1300	95.3	58	30	90	10	107.1	1002.8
1400	96.2	58	28	340	7	108.3	1001.8
1500	100.5	67	34	90	12	121.7	1001.0
1600	100.0	62	29	110	15	111.8	1000.3
1700	98.8	55	23	90	20	105.2	999.8
1800	98.0	54	23	90	17	102.6	999.8
1900	96.0	54	24	90	12	97.4	999.8
2000	95.2	54	26	90	9	95.9	999.8
2100	94.0	55	27	90	7	94.2	1000.5
2200	92.9	56	29	90	8	93.1	1000.5
2300	91.4	56	30	45	2	91.3	1000.6
2400	90.2	55	31		C	90.0	1000.6

TEMPERATURE

MAXIMUM 101
 MINIMUM 82
 MEAN 92

RELATIVE HUMIDITY

MAXIMUM 66
 MINIMUM 23
 MEAN 45

PREVAILING

VISIBILITY
 (SUNRISE - SUNSET)
 34 Miles

24 HOUR
 PRECIPITATION

Trace

PREVAILING

SKY COVER
 (SUNRISE - SUNSET)
 8 - Cloudy

YUMA USWB DAILY
 NORMAL TEMPERATURE

MAXIMUM 103
 MINIMUM 77
 MEAN 90

PREVAILING WIND

E 10 MPH.

DAILY PEAK WIND-GUST

S 35 MPH.
 0145 MST.

Sunset: 1850 11 Sept 59 Sunrise: 0619 12 Sept 59
 Forecast for 11 and 12 Sept 1959:

SPECIAL THUNDERSTORM AND WIND ADVISORY!

Cloudy today and tonight with decreasing cloudiness Saturday. Low cloud bases 6 - 8000 feet, higher bases 12-14000 feet. Showers and thunderstorms with strong winds vicinity of thunderstorms today through Saturday. Surface winds 1000 - 1800 hours today, mostly East to Southeast 5-15 MPH. Slightly cooler and continued humid today, little change in temperature Saturday.

High today 96 Low tonight 76 High tomorrow 98

Outlook for Sunday:

Partly cloudy with scattered afternoon and evening thunder showers. Slightly warmer with lower humidity.

High 99 - 101 Low 75 - 77 C-38

MULTIPLE STARGAGE MEASUREMENT & INSPECTION DATA FORM

90% Recoilless Rifle T219E4		HARD PUNCH 17.40" TO 47.11"							
CASTING NUMBER	MANUFACTURER	MODEL	NUMBER OF ROUNDS	PROOF OFFICER	DISTANCE (INCHES)				
					FEET	INCHES	FEET	INCHES	
W.T. A.S.		T219E4	110	W.D. 397-098-52	49.00	1.000	+ .004	+ .001	+ .003
					48.50	0	3	1	3
					48.00	0	3	1	3
					47.50	+ 1	2	1	2
					47.00	2	1	2	1
					46.50	2	2	2	1
					46.00	2	2	1	1
					45.50	2	2	1	1
					45.00	2	2	1	1
					44.50	2	2	1	1
					44.00	2	2	1	1
					43.50	1	2	1	1
					43.00	0	1	1	1
					42.50	0	1	1	1
					42.00	0	1	1	1
					41.50	+ 3	1	1	1
					41.00	4	5	1	1
					40.50	5	6	1	0
					40.00	6	6	1	0
					39.50	5	5	1	1
39.00	5	5	1	1					
38.50	5	5	1	1					
38.00	+ .067	+ .007	+ .001	+ .001					
90% Recoilless Rifle		12	110	1 OCT. 1959	16.20	+ .090	3.633	+ .090	3.633
					16.00	.091	3.634	.091	3.634
					15.00	.094	3.637	.094	3.637
					14.00	.097	3.640	.097	3.640
					13.00	.100	3.643	.100	3.643
					12.00	.103	3.646	.103	3.646
					11.00	.105	3.648	.105	3.648
					10.00	.109	3.652	.109	3.652
					9.00	.113	3.656	.113	3.656
					8.00	.115	3.658	.115	3.658
					7.00	.119	3.662	.119	3.662
					6.00	.123	3.666	.123	3.666
					5.00	.126	3.669	.126	3.669
					4.00	.129	3.672	.129	3.672
					3.00	.133	3.676	.133	3.676
					2.00	.136	3.679	.136	3.679
					1.00	.139	3.682	.139	3.682
					.50	.141	3.684	.141	3.684
					.30	+ .142	3.685	+ .142	3.685
					SLOPE MEAS.				
16.55" TO 17.46"					17.00	.050	3.593	.050	3.593
FROM R.F.R.					17.30	+ .022	3.563	+ .022	3.563
GANGED BY					EDWARDS MCKAY GURIN				

1000000 1959

D.E. 110-725.

ORDPO Form 2045--(R), Reinstated 9 Jul 59 (Part 2)

MULTIPLE STARGAGE MEASUREMENT & INSPECTION DATA FORM

90 M/M Recoilless Rifle 7219#		Main Bore, 17.40" To 19.11"		Grooves		
Balances in inches from		Lands		Grooves		
	Rear Face of Tube	Basic Diam. Vert.	3.543" Hrs.	Basic Diam. Vert.	1.555" Hrs.	
4	49.00*	.000	+1.004	+1.001	+1.003	
	48.50	0		1	3	
	48.00	0		1	3	
	46.00	+1.001		1	2	
	44.00	2	2	2	1	
	42.00	1	2	1	2	
	40.00	1		1	1	
	38.00	1		1	1	
	36.00	1	2	1	1	
	34.00	1		1	1	
	32.00	1		1	2	
	30.00	.000	1	1	2	
	28.03	0		1	1	
	26.09	0		1	1	
	24.49 3	+1.002	1		1	
	22.00 4	4	5	5	1	
	20.94 5	0	6	6	0	
	20.40 6	6	6	6	1	
	19.40	6	6	6	1	
	18.40 5	5	5	5	1	
17.90	5	5	5	1		
17.65	5	5	5	1		
17.50 7	+1.007	+1.006	+1.001	+1.001		
		Chamber				
	Y	Actual		Actual		
	16.20	+1.090	3.633	+1.090	3.633	
	16.00	.091	3.634	.091	3.634	
	15.00	.094	3.637	.094	3.637	
	14.00	.097	3.640	.097	3.640	
	13.00	.100	3.643	.100	3.643	
	12.00	.103	3.646	.103	3.646	
	11.00	.105	3.648	.105	3.648	
	10.00	.109	3.652	.109	3.652	
	9.00	.113	3.656	.113	3.656	
	8.00	.115	3.658	.115	3.658	
	7.00	.119	3.662	.119	3.662	
	6.00	.123	3.666	.123	3.666	
	5.00	.126	3.669	.126	3.669	
	4.00	.129	3.672	.129	3.672	
	3.00	.133	3.676	.133	3.676	
	2.00	.136	3.679	.136	3.679	
	1.00	.139	3.682	.139	3.682	
	.50	.141	3.684	.141	3.684	
	.30	+1.142	3.685	+1.142	3.685	
	Slope Meas, 16.55"	16.65"	+1.079	3.622	+1.079	3.622
	To 17.40" From R.F.T.	17.00	.050	3.593	.050	3.593
		17.30	+1.022	3.563	+1.022	3.563
					Actual	
	Firing Pin Indentation.				.005"	
	Weight of Rifle with accessories including sight.				36.44 lbs	
	Weight of sight.				.98 lbs	
	Weight of Rifle without accessories and sight.				20.80 lbs	
	Weight of accessories without sight.				14.66 lbs	
	(Over)					

ORDBO Form 2045-(R), Reinstated 9 Jul 59 (Part 2)

90M/M Recoilless Rifle T219M		Main Bore. 17.40" To 49.11"				
Distance in inches from		Lands		Grooves		
Rear Face Of Rifle		Basic Diam. Vert.	1.543" Hors.	Basic Diam. Vert.	1.555" Hors.	
49.00	.000	+ .002		+ .001	+ .003	
48.50	0	3		1	2	
48.00	0	3		1	2	
46.00	+ .001	2		1	1	
44.00	1	2		1	1	
42.00	1	2		1	1	
40.00	1	2		1	1	
38.00	1	2		1	1	
36.00	1	2		1	1	
34.00	1	2		1	1	
32.00	1	2		1	1	
30.00	0	2		0	2	
28.03	0	1		0	2	
26.00	0	1		0	1	
24.49	+ 3	2		0	1	
22.00	5	4		0	1	
20.94	6	6		0	1	
20.40	6	6		0	1	
19.40	6	6		0	1	
18.40	5	5		+ 1	1	
17.90		5		1	1	
17.65		5		1	1	
17.50	+ .001	+ .007		+ .001	+ .001	
		Chamber				
		Y	Actual	A	Actual	
16.20	+ .090	3.633		+ .090	3.633	
16.00	.091	3.634		.091	3.634	
15.00	.095	3.638		.095	3.638	
14.00	.097	3.640		.097	3.640	
13.00	.100	3.643		.100	3.643	
12.00	.103	3.646		.103	3.646	
11.00	.106	3.649		.106	3.649	
10.00	.110	3.653		.110	3.653	
9.00	.113	3.656		.113	3.656	
8.00	.116	3.659		.116	3.659	
7.00	.120	3.663		.120	3.663	
6.00	.123	3.666		.123	3.666	
5.00	.126	3.669		.126	3.669	
4.00	.130	3.673		.130	3.673	
3.00	.133	3.676		.133	3.676	
2.00	.136	3.679		.136	3.679	
1.00	.140	3.683		.140	3.683	
.50	.141	3.684		.141	3.684	
.30	+ .142	3.685		.142	3.685	
X	Slope Meas, 16.55"	16.65	+ .079	3.622	+ .079	3.622
	To 17.40 From R.F.T.	17.00	.050	3.593	.050	3.593
		17.30	+ .022	3.563	.022	3.563
					Actual	
Firing Pin Indentation.					.005"	
Weight of Rifle With accessories including sight.					36.44 lbs.	
Weight of sight.					.98 lbs.	
Weight of Rifle without accessories and sight.					20.80 lbs.	
Weight of accessories Without sight.					14.66 lbs.	
Over						

40th Precinct, No. 12, T219 E4.

APPENDIX E

Ammunition Data Cards

ORDNANCE CORPS Ammunition Data Card and Lot Description Sheet

Arsenal, Plant, or District
Development & Proof Services
APG, Maryland

Lot Number AFG-856
Packing of Lot: In fiber
containers 2 Ea per wooded
box

ITEM: Cartridge HEAT, T249E6 Inert loaded for
90 MM Rifle T219E4

DATE STARTED: 7-28-59
CHARGE WEIGHT: 24.402

DATE COMPLETED: 7-31-59

COMPONENTS

<u>COMPONENT</u>	<u>DRAWING NO.</u>	<u>MODEL</u>	<u>MANUFACTURER</u>	<u>LOT NO.</u>	<u>QUANTITY</u>
Shell		T249E6	FA	E356-6	40
Case Cart.		T115E5	HA	7-58	40
Propellant		T31	PA	E-28174	40
Cart, Ignition	CPX 90868	T-	FAP	302	40
Primer	FB 38951	T116E2		None	40

PURPOSE - For shipment to Transportation officer, Yuma Test Station, Yuma,
Arizona M/F US Army Ordnance Test Activity Supply Officer Account
6-4539.

/s/ Vernon Keithley
VERNON KEITHLEY

EXPERIMENTAL AMMUNITION DATA CARD

No. 89625

KIND: Cartridge, HEAT, 90MM, T249E6, with Fuze, PI, BD, AMM. LOT NO.
T278E7-3 for Rifle, T219 PA-E-28439

DRG. NO.	DRG. DATE OR REV.	P.A.X.O.	PROP. CHARGE
FF-8741	8-23-57	1734-01	22.28 ozs.
EXPECTED M.V.	EXPECTED PRESSURE	ASSEMBLED BY	DATE OF ASSEMBLY
700 ft./sec.	5300 lbs./sq. in.	PA	January, 1959

REMARKS: Packed: 2 Cartridges/fiber container/wood box.
Wave, Washer, Dwg. FA-30411, Rev. 3-18-57 utilized, not shown on drawing. 10
Ballistics shipped to Aberdeen Proving Grounds for determining ballistic data
in accordance with BATR to be furnished by Frankford Arsenal. Luckies tested
100%. Shell x-rayed 100%. Hold for release pending notification of ballistic
acceptance by Aberdeen Proving Ground.

COMPONENT	Charge	DRG. NO.	
KIND	Burster	DRG. DATE OR REV.	
	Comp. B	MFG'D. BY	Holleran
		DATE	1958
		LOT NO.	HOL-7-1049

COMPONENT	KIND	DRG. NO.	DRG. DATE OR REV.	MFG'D BY	DATE	LOT NO.
Case	Cart., T115E5	FC-8421	4-24-57	FA	1958	FA-E-355-2, -3
Disc	Rupture	FA-30378	12-10-56	FA	1958	FA-E-355-2, -3
Propellant	Chg., T31 .025 Web	663-97	3-23-56	PA	1958	FA-E-26568
Cartridge	Ignition T	CXP-90868	5-3-57	FA	1958	FA-P-301
Shell HEAT	T249E6 Comp. B	FF-8743	5-28-58	FA	1958	FA-E-356-8, -4
Primer	Assembly T116E2	FB-38951	2-8-57	FA	1958	None
Fuze	PI, BD T278E7-3	TL3F5002	unk	PA	1958	PA-E-28080

PREPARED BY: E. BurdArs Opers
DivisionCERTIFIED TO BY: /s/F. Lewis
F. Lewis INSPECTORInspection
DivisionPicatinny Arsenal
Dover, New Jersey

EXPERIMENTAL AMMUNITION DATA CARD

No. 59626

KIND: Cartridge, 30.06, HEAT T249E6 with Dummy Fuze, T270E7
and Inert Shell for Rifle, T219AMM. LOT NO.
PA-E-20440

DRG. NO. FF-3741	DRG. DATE OR REV. 8-23-57	P.A.X.O. 1734-01	PROP. CHARGE 22.28 ozs.
---------------------	------------------------------	---------------------	----------------------------

EXPECTED M.V. 700 ft./sec.	EXPECTED PRESSURE 5300 lbs/sq. in.	ASSEMBLED BY FA	DATE OF ASSEMBLY January, 1959
-------------------------------	---------------------------------------	--------------------	-----------------------------------

REMARKS: Packed: 2 Cartridges/fiber container/wood box.
 *Filler E: 40% Gypsum mfg'd by US Gypsum, 20% Iron Oxide mfr. Stanley
 Doggett, 35 Glyceride mfr. Baker Castor Oil Co., and 5% Wood Rosin mfr.
 Newport Industries. Wave Washer, Dwg. FA-30411, Rev. 3-18-57 utilized, not
 shown on drawing. 10 Ballistics shipped to Aberdeen Proving Ground for
 determining ballistic data in accordance with BATR to be furnished by Frank-
 ford Arsenal. Hold for release pending notification of ballistic acceptance.

COMPONENT KIND	*Charge Inert Filler "E"	DRG. NO. DRG. DATE OR REV. MFG'D BY DATE LOT NO.	PA 1958 None
-------------------	--------------------------------	--	--------------------

Remarks: By Aberdeen Proving Ground.

COMPONENT	KIND	DRG. NO.	DRG. DATE OR REV.	MFG'D BY	DATE	LOT NO.
Case	Cartridge T115E5	FG-8421	4-24-57	FA	1958	FA-E-356-2, -3
Disc	Rupture	FA-30378	12-10-56	FA	1958	FA-E-356-2, -3
Propelling	Chg., T831 .025 Web	663-97	3-23-56	FA	1958	PA-E-26568
Cartridge	Ignition T	CXF-90868	5-3-57	FA	1958	FA-P-901
Shell	HEAT T249E6	FT-8743	5-28-58	FA	1958	FA-E-356-3, -4
Primer	Assembly T116E2	FB-38951	2-8-57	FA	1958	none
Fuze, F	PI, BD, T270E7	unk	10-1-58	FA	1958	none

PREPARED BY E. DurdCERTIFIED TO BY: F. Lewis INSPECTORArs Opers
DivisionInspection
DivisionPicatinny Arsenal
Dover, New Jersey